*September 1979*

# Smithsonian

First panda born as result
of artificial insemination
is thriving in China (p. 44)

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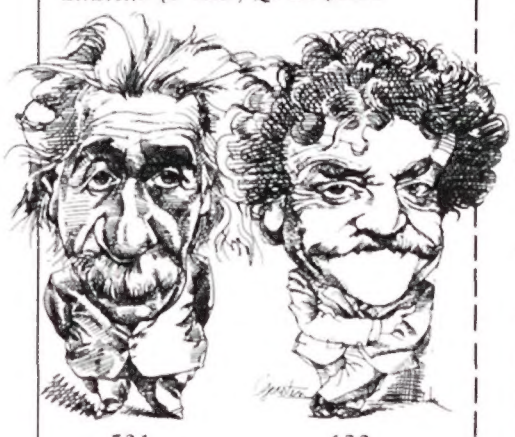

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*September 1979*

# Smithsonian

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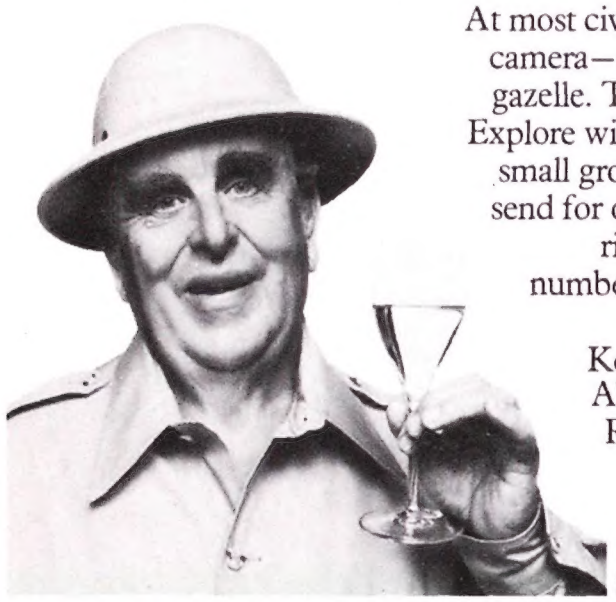

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Some people see him taking the sun on a rocky shore, looking about imperiously. Others see an Edwardian patriarch. Whatever his character, he is brought to life by the radiance of the crystal.

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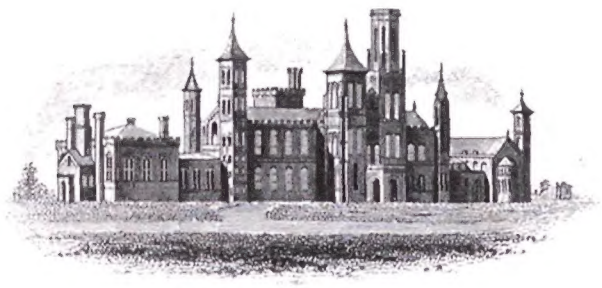
*Secretary Ripley's comments*

# *The view from the castle*



*The fascination of a rain forest lies in its multitude of life forms, its disorienting scale, its glimpses of something beyond reach*

Nothing is more tantalizing to a naturalist than living in dense jungle on the side of a mountain. The only track here on the Burma-India border is wet and rutted, jeepable only part of the time, beset by mudand rockslides and fallen trees—huge bamboo or banana trunks brought down at night by passing wild elephants.

All through the tangle dart myriad birds, a cross section of a total avifauna of 700 to 800 species. Proportions are misleading seen against the scale of 100-foot trees. Pigeons sometimes look the size of starlings, warblers seem like insects. Bird nets are essential in this vast greenhouse. Only by catching a bird and examining it for a few moments in the hand can we identify it with certainty.

Dr. Sálim Ali, India's celebrated ecologist, and I have been working together on the birds of the Indian region of South Asia for 33 years. We see a bird caught in one of our nets 20 feet down the line. We call out to each other, "Ah, a parrotbill!"—only to find, at arm's length, another babbler or bulbul of quite different pattern and proportion. The same with binoculars: it is rare to see a bird alight on a branch 200 feet away and be able to locate it with the glasses before it has moved on. If one does manage to do so, it is often a different species from what it seemed in flight.

Even large birds can pose a problem. The Great Hornbill, almost five feet long with huge cream-and-black-banded wings, folds itself up in the crown of a tree so compactly as to become, despite its grotesque orange and yellow bill, invisible to the bemused eye.

This is one of the least-traveled parts of India. Traces of World War II activity are nonexistent, suggesting that it was not a negotiable byway even during those hectic days. The jungle here is true rain forest, with maximum vegetation, evergreen the year round (as in Costa Rica; see pp. 64-73). Even in the dry season of early March, the sky is full of clouds, and by mid-March rain comes daily.

We keep hoping that the clouds will go away, but they never do, in spite of radiant, dewy, pink-tipped sunsets. Occasionally the mists rise like theater curtains from the hills across the valley, but reluctantly—almost like the fifth curtain call at the opera when the stagehand is unsure of the level of applause. But we are not a blasé audience, and when the clouds lift we almost clap—for there, bathed in an ethereal orange-pink radiance, are the snows, a whole serrated line of peaks covered with fresh drifts, product of the rain that has been buffeting us below.

As if to greet the sunset, the gibbons raise their voices in evening song, their loud, hooting ululations mixed with shrieks and whistles and whoops. Some of their calls are sweet and birdlike, others raucous and demented. I love to watch them drinking, silhouetted on a high branch, their wrists gracefully curved inward, sipping and savoring drops of water from their fingertips.

I can only feel immensely privileged to be here at all. Such scenes as these remind us of our fragile world, our origins and our needs, spiritual as well as physical. To know that one can look on such a sight is balm to the soul.

S. Dillon Ripley

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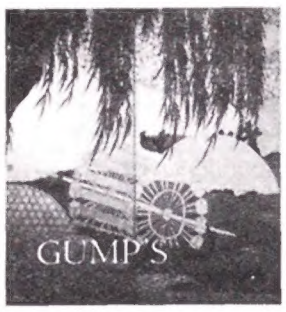


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# *Letters to the Editor*

## *Harp seals*

Dear Sir: Divers Bora Merdsoy and Bill Curtsinger, in your July issue, are to be praised for their outstanding excursion into the frozen underwater world that the harp seal so miraculously lives in.

The curiosity about Man expressed by *Pagophilus groenlandicus* verifies the seal's friendly intentions toward Homo sapiens; the annual harvesting by Man of baby harp seals in the Gulf of St. Lawrence verifies the senseless, wasteful destruction of a beautiful animal that possesses points of character that humans should take note of.

*Sydney E. Faulconer*
Lynchburg, Virginia

## *Richard Adams*

Dear Sir: Just after finishing "Two worlds of the harp seal," I turned to Timothy Green's article on British author Richard Adams. Stopping the killing of harp seals, Adams says, is at the top of his priority list, but I believe that those seal pups are a crop to be harvested. Left alone, the seals may ultimately overpopulate and eat themselves into starvation.

Now, as to the killing of animals, Mr. Adams does wear leather shoes and probably eats steaks, which come from cattle. Has he ever been to a slaughterhouse and watched the equivalent of our 4-H Baby Beef Champions—pets from the day they were dropped—come up the ramp wild-eyed and terrified? I'm merely recounting this and other scenes I've witnessed. I'm not saying this is good, but apparently the packers have not found a more efficient, humane way.

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Mr. Adams would do well to stick to stories that do not give animals human abilities, attitudes and reasoning power.
*S. V. Frohlicher*
Great Falls, Montana
*In a forthcoming issue Smithsonian will report on the pros and cons of the seal harvest itself—an event which generates the sharply differing opinions reflected in the letters of Mr. Faulconer and Mr. Frohlicher.* Ed.

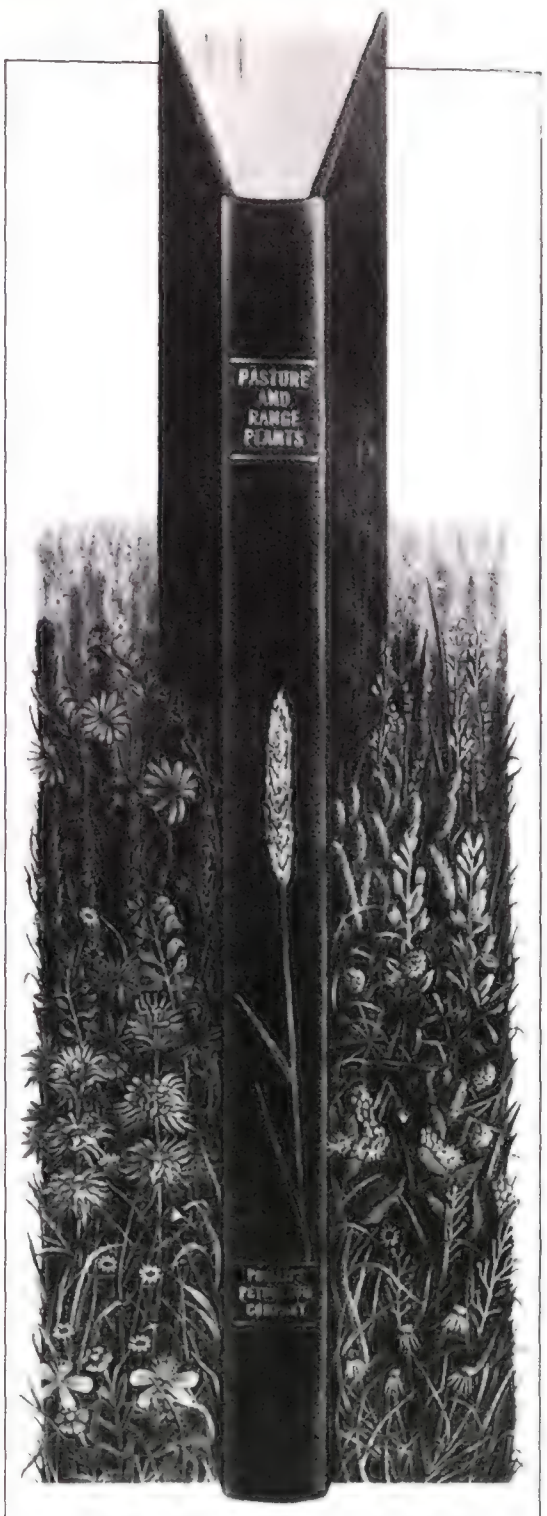
Dear Sir: At the risk of sounding dogmatic, I want to point out a discrepancy between the Timothy Green description of Richard Adams' dog Will ("an aging Irish setter") and the Will proffering a paw to Mr. Adams in the photograph of them taken at Dhoon Glen. The pictorial Will I would describe as a shepherd or possibly a collie-German shepherd cross.
*Judith Ferguson*
Perry, Ohio
*In reviewing his notes, author Green found that Adams told him Will was an Irish setter, but he neglected to say that was only part of his heritage. Mrs. Adams said, "The late-lamented Will was setter-colored and certainly had some setter in him. He was really 57 varieties," she added, "including setter and collie; his father may even have been a Labrador. He was just a grand mixture."* Ed.

## *"Weston the walker"*

Dear Sir: Edward Lamb's article on Edward Payson Weston in the July issue brought back memories of my childhood. Although I was only five years old at the time, I can recall the excitement when Weston passed through Madison, Ohio, on his 1910 West-to-East Coast walk.

The local dignitaries turned out to escort him through the village—among them my father, also an avid walker. He walked several miles with Weston.
*Rolland T. Whapham*
Mentor, Ohio

Dear Sir: I found no mention of whether or not Mr. Weston indulged in food or water en route. It would be good to know.
*Jerome Selinger,* M.D.
New Canaan, Connecticut
*Weston had this to say about his eating and drinking habits on the road: "All my 58 years of professional walking I ate sparingly. My chief meal was breakfast. I ate a good big dish of oatmeal with milk*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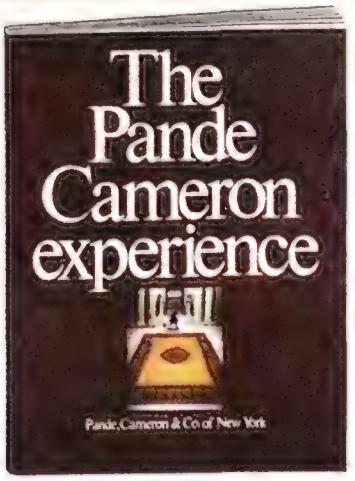


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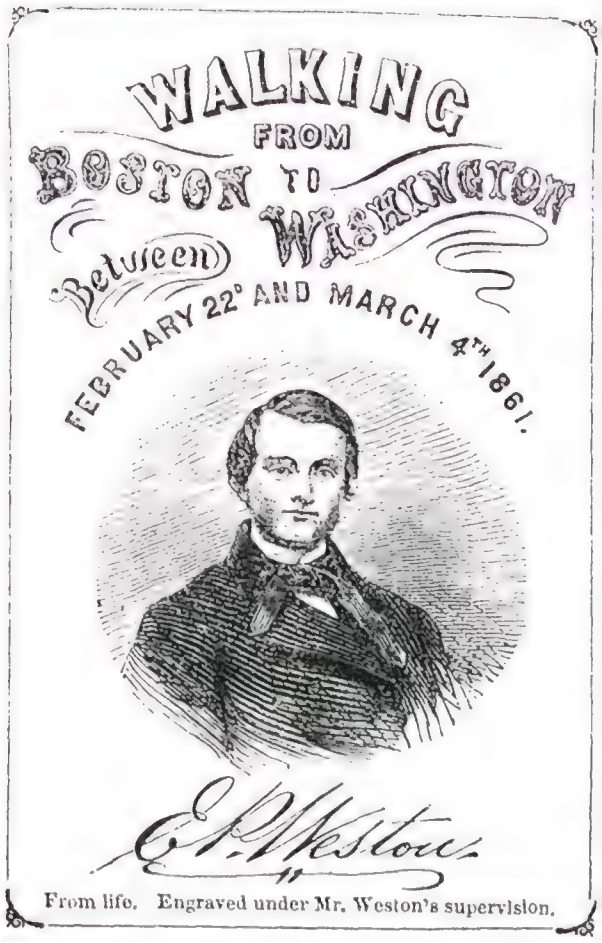
*or cream, toast or a muffin, and coffee. During the day I would eat crackers, drink tea and coffee occasionally, and munch chocolate. Malted milk was a favorite. I am not a vegetarian. Until I was well over 70 I ate my share of meat, but I ate it sparingly.*" Ed.




Dear Sir: Edward Lamb's delightful article on "Weston the walker" solved a curious riddle for me. Several years ago I purchased an 1860s-vintage book from a secondhand bookseller. In the book was a small handbill [see above] that Weston distributed while making that walk from Boston to Washington. Weston's walking wager is described in the handbill: "During the Presidential Campaign of 1860, he made a wager, agreeing, if Abraham Lincoln was elected by the people President, to walk from Boston, Mass., to Washington, D.C., *inside of ten consecutive days!*—and be present at the Inauguration! He is now on the road, performing this agreement foolishly made, and leaves this card with those who choose to preserve it as a memento of his trip."
*Bruce Yandle jr.*
Clemson, South Carolina

## *Santa Monica recreation area*

Dear Sir: Jess Cook's excellent article on the Santa Monica recreation area points out the fundamental problems we face in

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preserving large tracts of land for public parkland in the face of urban pressure for more living space.

I have lived in Southern California most of my 30 years and have never truly been much aware of the Santa Monicas until recently. After having lived a few years in Washington, D.C., and having been repeatedly refreshed by trips to Shenandoah National Park, I can't help feeling that had there been a major city and heavy industry nearby, that park would have been transformed into concrete and asphalt and TV antennas.

*Gordon K. Ting,* DDS
Van Nuys, California

Dear Sir: As author of the legislation creating the Santa Monica Mountains National Recreation Area, I commend you for bringing this wonderful recreational resource to national attention. Happily, the House Appropriations Committee has recently allotted $35 million for fiscal year 1980 for land acquisition instead of the $13 million originally requested. And local government is re-evaluating its position on development of the area.

I am optimistic that the dream of a major park is very close to reality.

*Anthony C. Beilenson*
Member of Congress (D., Calif.)

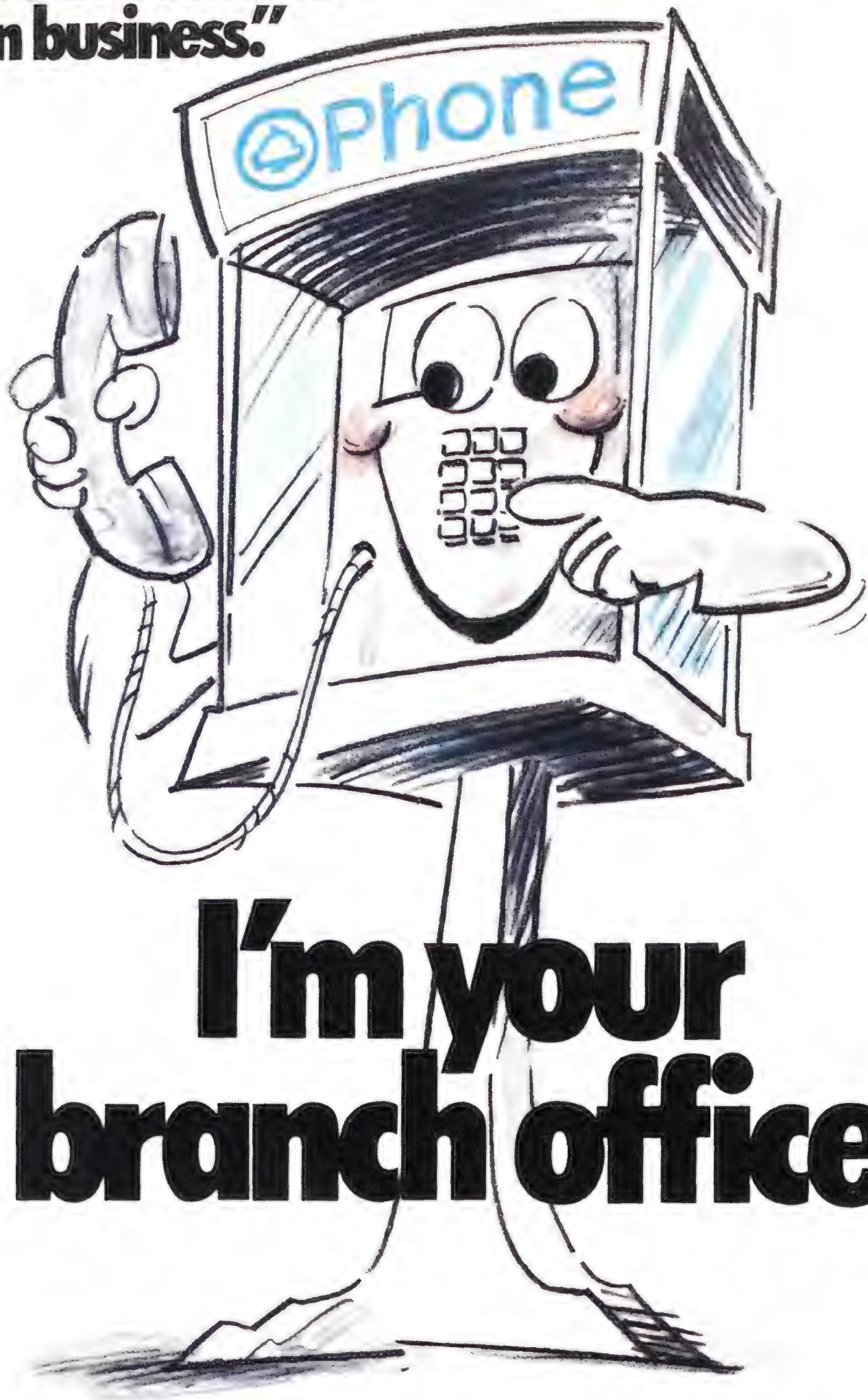
## *Three Mile Island*

Dear Sir: I am disturbed by the report on Three Mile Island in "Phenomena, comment and notes." The world was confronted with a major catastrophe that was without precedent. The five commissioners who were most responsible for deciding what action should be taken assembled a corps of the most competent advisers available. For six days and nights these five men labored and were confronted with conflicting advice and unprecedented situations. The stress and strain were tremendous and were sometimes revealed by feeble attempts at humor and by poorly chosen expressions.

The labors of these men were recorded in 800 pages of transcript, and the manner in which the journal of our national scientific organization recorded this momentous event is, to me, unbelievable. Your magazine seemed to scour the report for impertinent bits and pieces to expose the NRC commissioners to ridicule and scorn.

*R. B. Scherr*
Memphis, Tennessee

"You're in business?
I'm in business."

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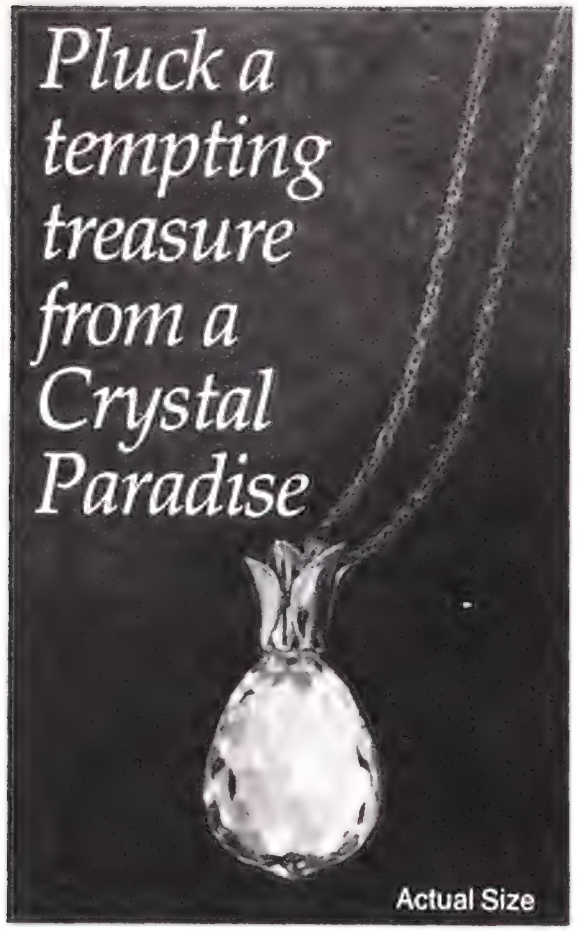


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Dear Sir: Paul Trachtman's selections from the NRC Three Mile Island deliberations strike us as a departure from your usual standard of quality.

Which of us has not benefited from the injection of levity used to break tension in extended, pressure-filled group meetings? Which of us could not be made to look foolish by the "tin ear" of a tape recorder monitoring private interchange?
*Mark and Carole Banfield*
San Antonio, Texas

Dear Sir: To those of us living at the epicenter of the TMI accident, it has been bone-chilling and mind-boggling to read the 800-page transcript of the emergency meetings of NRC commissioners.

NRC's commissioners exercise awesome powers; on their decisions, literally, can hinge the life or death of thousands, perhaps millions, of persons. That the best that can be expected of them, faced with possible nuclear holocaust, would be to debate the wording of a defensive press release or how to share a malted milk is depressing and frightening.
*John H. Murdoch*
Camp Hill, Pennsylvania

Dear Sir: Hooray for Mr. Paul Trachtman! I can't think when I've laughed so much as I did on reading his report on the NRC commissioners' (mis)handling of the TMI crisis. It will be Broadway's loss if he doesn't take time off to write a smash hit—all the ingredients are there for a hilarious comedy.
*Virginia A. Browning*
Naples, Florida

## . . . *Justice is easy as pi*

Dear Sir: In regard to the essay, "For the court Caruso, justice is easy as pi," anecdotes about the mystique of pi abound in literature and history.

In 1897, the Indiana Legislature seriously considered a bill to redefine pi as 3.0—and it could have used the Bible (I Kings 7:23) as a reference for that value: "And he made a molten sea, ten cubits from the one brim to the other: it was round all about, and his height was five cubits: and a line of thirty cubits did compass it round about."

Pi are square, you ask? No, pi are round. Corn bread are square.
*Lee Ratzan*
Newark, New Jersey

# Selecting A Vineyard Site

4

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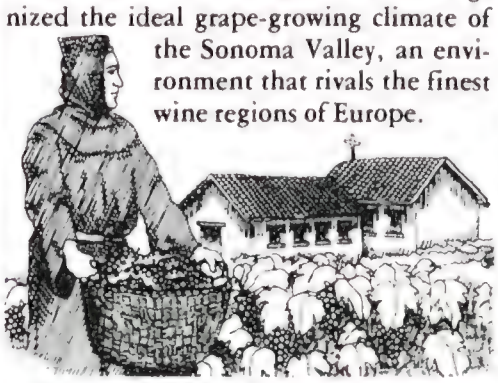

Fifty miles from the ocean, the Sonoma Valley is blessed with warm days and cool nights, a combination that extends the growing season and allows vines ample opportunity to absorb nutrients from the mineral rich valley soil. Summer morning fogs revitalize the leaves enhancing their photosynthetic abilities and contributing to the overall health of the vine and its fruit.

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# *Phenomena, comment and notes*

Not yet burdened with nest duty, a male Northern Jaçana responds to invader.

*In defense of a friend, a damper Mars and a trimmer Earth, child abuse by society, and an ornithological scandal*

Sociobiology buffs, in particular female sociobiology buffs, are invited to look closely at the mating and parenting practices of certain species of birds. Among Greater Rheas, sandpipers and phalaropes, the females leave the males once eggs are laid and go off to mate with other males. The evolutionary strategy is to take advantage of their ability to lay several clutches of eggs rapidly per season and, to implement the strategy, husband number one is left alone to raise the young. This is called sequential polyandry, but, as Dr. Donald Jenni of the University of Montana points out in *New Scientist* (Vol. 82, No. 1159), zoologists just don't understand why it has come about.

An even more flagrant example of this is the Northern Jaçana, a long-toed bird common in Central America that feeds in marshes and lakes. "Female jaçanas," says Dr. Jenni, "are brazen hussies . . . or fine examples of evolution in action depending on your point of view." They practice "simultaneous polyandry"; females have now been caught mating with as many as four males in one hour. There used to be another word for that, I believe.

In any event, with a little desultory help from the females, the males proceed to make a rather slipshod nest; when the females lay eggs in it, the males will incubate these eggs and busily shore up the nest, while the females wander off.

A female typically has two males raising her two broods on two territories that she defends against intrusion, often by bachelor females that lurk around trying to grab off a nice, docile male. An egg-tending male will cry out for help when a strange female (or a Purple Gallinule, which eats jaçana eggs) approaches. Thus summoned, the old battle-ax rushes back to the territory from whatever she's been up to—and more often than not chases the intruder away.

The only interest the female seems to show in the eggs is to approach the nest occasionally, peer closely to see that her Caspar Milquetoast hasn't grown sloppy, then go off to check on her other mate.

It should be noted, lest this wholly neutral report from the annals of ornithological hanky-panky be taken as an excuse for starting a trend, that Dr. Jenni believes the Northern Jaçana to be the only species of bird known for sure to practice simultaneous polyandry.

### *Hope springs eternal*

The Viking landers on Mars pretty well relegated to the rubbish heap any expectation that the red planet might harbor life. The soil is too dry, according to the information they sent back. The only water would be tied up in permanent ice caps; no groundwater. But Robert Huguenin of the University of Massa-

# On Photographing a Small Step

It is unearthly. The landscape underfoot. It is soft and powdery.

A silver beast stands there. His head is a shiny globe. His huge frankfurter fingers hold a small box that talks.

*Click. Whir. Click. Whir.*

A man is taking the first pictures on the moon. He takes them with a camera that gives him startling detail. It is a Hasselblad.

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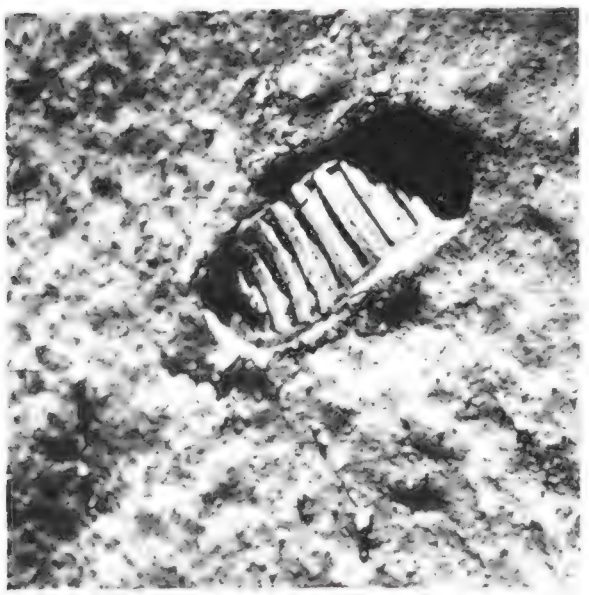

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Or trigger up to four cameras simultaneously with a command unit.

Or, fitted for remote radio control, fire from a half mile away.

And the standard film frame on a Hasselblad is 2¼ inches square, *almost 4 times the area* of a 35mm frame. So the ability to hold sharpness and contrast is phenomenal. (For actual size of film frame, see box at lower right.)

## The eyes of a Hasselblad

A Hasselblad can see with any one of 22 lenses; all multi-coated (except for two special purpose lenses) in focal lengths from 30mm to 500mm with angular fields from 180 degrees to 9 degrees.

There are lenses for sports, aerial, architectural, and fashion photography. Portrait, landscape, medical, underwater and news photography. Wildlife, laboratory, industrial and child photography.

*A lavish brochure on the 500 EL/M and other Hasselblad cameras is available free if you write: Braun North America, Dept. S9H9, 55 Cambridge Parkway, Cambridge, MA 02142—a division of The Gillette Company and exclusive marketer of Hasselblad in the U.S.*

There is even the 105mm Zeiss UV-Sonnar f4.3 which can photograph the ultraviolet portion of the electromagnetic spectrum with costly quartz elements that can detect radiations unseeable by the human eye.

There are also lenses that adjust the aperture fully automatically as the light changes.

Even if you are not yet into these more exotic applications but simply recording travel and everyday happenings, it's nice to know that your camera produces the very best images in the medium format.

So, in effect, there is nothing you can't see with a Hasselblad. And photograph. From what is invisible to the naked eye to all that is visible in the universe.

Is it any wonder then that NASA came to Hasselblad for the camera which was to photograph space? And that top professional and serious amateur photographers still rely on Hasselblad.

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chusetts continued to hope. Three years before the Viking landings of 1976, he had seen bright spots spreading across the landscape south of the planet's equator. For six years he kept watching these spots and now says, according to *Chemical & Engineering News* (Vol. 57, No. 25), they could be water vapor that arises from the soil during the day and condenses as frost at night. If it's pure ice, it would become liquid a couple of hours a day for half the Martian year; if it's brine, it would be liquid part of the day all year, and liquid throughout the day in summer. And astronomer Huguenin points out that there are terrestrial creatures that can live under such conditions. It would seem that these "oases" are the proper targets for any well-sterilized future landers.

*Megadiet*

In this age of dedicated weight watching, it should come as good news to all hands that Mother Earth has lost (since 1975) 41.34 million billion tons. According to *Science News* (Vol. 115, No. 24), the official value now for the mass of the Earth, including the atmosphere, is 6.586 billion trillion tons.

The calculation is made by tracing radio signals from spacecraft and bouncing laser beams off reflectors left on the moon and off a satellite; beyond that it is too complicated for me to explain. But even though it isn't much by way of a percentage loss, and even though it was achieved chiefly by refining the scale, as it were, that sheer amount of weight reduction should be a lasting inspiration to the overweight of the world.

*A double blow*

Consecutive articles in *Technology Review* (Vol. 81, No. 7) described some recent findings about a one-two punch that U.S. society delivers to its children.

First, remember the public hysteria about lead poisoning of children a few years back? The public has found new things to be hysterical about, but the lead is still with us, in the form of leaded paint, dust from walls covered with leaded paint, gasoline and industrial pollutants, tobacco smoke, drinking water and so forth. A recent study suggests that 500,000 American children suffer from lead-related problems *each year.*

The federally mandated safe "thresh-

# WHERE IS IT WRITTEN THAT A HIGH-PERFORMANCE CAR CAN ONLY BE APPRECIATED BY A MAN?

In the minds of many, a woman's place is behind the steering wheel of a large, lumbering family car—automatic, of course—filled with children, grocery bags and the inevitable family dog.

One need look no further than the popularity of the BMW 320i among women to realize that this rather stultified image is more than a little outdated.

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Although the BMW 320i provides all the practical considerations one expects in a small family sedan, it also provides a driving experience so rare that people who have never before enjoyed driving find themselves seeking out long sweeping curves and challenging back roads.

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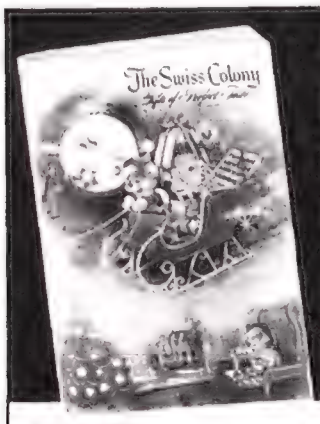

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old" level of lead is 30 micrograms per 100 milliliters of blood, but it now is becoming clear that much less than that is harmful. The Downstate Medical Center in Brooklyn, New York, studied children with subclinical levels of lead in their blood, analyzing them for signs of the behavioral problems associated with lead —notably, hyperactivity and mental retardation. The problems varied as expected with age, sex and culture, but also with lead levels. Even at these low levels, the more lead the worse the problem. When treated, most of the children's behavioral problems were reduced and the group's average IQ rose from 90 to 97.

Having accepted in its children's behalf the probable lowering of their IQ by seven points, society then proceeds to educate them by means of the television set. An emotional debate has been going on in the last few years over the effects of advertising beamed at kids amidst the cartoons that society sends the kids downstairs to watch because society wants to sleep late.

One Saturday morning last winter the three networks carried 154 commercials: 72 for sugared cereals, 35 for candy, 23 for fast-food restaurants, five each for cookies, powdered soft drinks and toaster tarts. *Technology Review* does not report about the nine other commercials, but one could safely guess that loud toys did not go unhustled.

Now everyone knows that sugary foods promote tooth decay; they also can help a kid along to obesity. And a Yale clinician, Dr. Robert Abramovitz, has pointed out that such commercials intensify the tendency toward instant self-gratification, just what kids of this age are supposed to be learning to control.

This issue may be resolved soon when the Federal Trade Commission rules on TV ads for kids, but, in the meantime, America's fat children with rotten teeth, rendered dumber than needed by society's acts, might well look up at society and say, "Gee, thanks, Dad and Mom."

*In defense of a friend*

A loyal presence in my household came in for a remarkable amount of flak because it was mentioned in this column a couple of months ago in connection with a rather disloyal presence in Pennsylvania. The suggestion here was that before Mrs. Tom Hayden and her followers shut down all the nuclear power plants, someone should provide another scheme by which my refrigerator could continue to do its work. It turns out that there are not only a lot of people out there who don't give a damn about my refrigerator, but also a lot who are actually willing to damn my refrigerator.

A case, however, *can* be made for my refrigerator. The basis of my defense is that it may well be a useful symbol as we enter the dreary new era of limits.

In the first place, this machine is secondhand. Not recycled, which is socially desirable, but merely secondhand. It has little yellowed bits of Scotch tape on it, unremovable reminders of notices it has presented to the family for many years without fail. It has few pretensions. It cannot make ice by itself, chunk-chunking ice cubes into any passing glass. Even with human intervention its freezer seems better at making frost than ice cubes. From time to time it produces little puddles of water on its bottom shelf, the incontinence of old age, perhaps, but an otherwise undiagnosed malady which the family lives with cheerfully enough. For what it does, it seems to use rather more energy than President Carter would consider appropriate.

But—and this is important to me, at least—it is the most faithful, most undemanding machine in my house. All the rest succumb with flabby moral fiber to the natural entropy to be found in a houseful of teen-agers. Introduce a spoon to my garbage disposal and it shuts down for the day. Put one towel too many in my washing machine and it affects so elaborate a case of tremors that it wets the floor. There is no pipe in my house that doesn't regularly pretend to have arteriosclerosis. Ah, but my refrigerator—a bit inefficient, yes. Not particularly handsome either, nor versatile. But it is loyal. It runs in its own quirky way, never missing a day.

Even though national and international events are outstripping its capabilities, even though emerging life-styles are rendering it a social evil, I like my refrigerator. It has a gentle personality, its own kind of rectitude, and I'll be damned if a group of self-righteous worrywarts, however justified their cause, are going to stop my refrigerator from doing its modest tasks until it decides itself to give up the ghost.

—James K. Page Jr.

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No matter where your love of the outdoors takes you, you'll be warm and comfortable in our Goose Down Pullover. Ultra-light Bauer Goose Down insulation makes this the ideal jacket for early spring through late fall. Outer fabric is durable nylon taffeta. V-shaped stretch-knit front panel with zipper converts from a spread collar to turtleneck. Knit nylon cuffs and waistband stretch with your every move yet fit snugly to keep out cold. Flap-covered sleeve pocket. Pullover stuffs into its own front pocket to form a hip pack or trail pillow; folds compactly for tucking in your duffel or tote bag. Weighs less than 20 ozs. Machine washable. **Sizes:** Men's S(37-39), M(40-42), L(43-45), XL(46-48). Women's S(8-10), M(12-14), L(16-18). **Colors:** Wine, Green, Navy, Electric Blue. **Goose Down Pullover $54.50** postpaid.

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# *Around the Mall and beyond*

Dr. Theodore H. Reed, director of our National Zoo, who talks about pandas on p. 44, sometimes drives around his domain in a sort of golf cart which can negotiate the footpaths and slip around the road barriers without going fast enough to pose a threat to man or beast. It's a privilege of rank. If you're famous or have done something extraordinary like donate a live yeti to the zoo, or if you're just plain lucky, you might get a ride in the cart with Ted Reed.

I got one, either for the last reason or because he got me confused with someone else. We drove past the birds that had been so amorous during the burgeoning of spring and found them merely languid in the heat of summer. We ventured down the new Beaver Valley, which opened in May, and found that the timber wolves were no longer restlessly digging, but were simply panting in the heat, accepting their new home; that the otters were not endlessly rolling and wrestling in play, but were lying side by side in a shady spot; that the beavers were not catatonic, stunned by their new surroundings, but had settled in nicely. They had obviously met the neighbors and knew which ones to borrow a quarter-pound of butter from; they approved of the school and they knew which days the trash collectors came. The sea lions, lively and unabashed when they first arrived in Beaver Valley, were quite irrepressible now. They dashed around their pool, shoving each other off favorite rocks and crowding clamorously around their keepers at mealtime. It was a wonderfully entertaining sight.

My host, however, seemed absentminded, almost morose. This was especially true as we drove around the old Lion House hill, and I ascertained that Ted Reed was still quietly mourning his old queen, the regal Mohini Rewa, the white Bengal tigress that died last April.

Everyone knows about the white tigers (SMITHSONIAN, April 1971). Mohini's arrival in 1960 was well publicized and the birth of her cubs got breathless attention in the press. "It's difficult to say how much the zoo owes that cat and her cubs," says Reed. "They drew attention to the facility and made all our recent improvements so much easier."

The late Mohini Rewa, "Enchantress" of the National Zoo.

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Reed recalled that Mohini lost a piece of ear to her first mate and sire of her first litter. This tiger, with white genes, was Samson, Mohini's uncle. On one of his early meetings with Mohini he nipped her ear as she leaned against the door of his cage. An Irish engineer at the zoo saw the episode and remarked admiringly, "Shure, 'tis the perfect lover!"

Nobody else took any liberties with Mohini. "The name means 'Enchantress,' " Reed sighed. "She was beautiful, aloof, disdainful. She knew she was queen of the harem. I've had other cats look at me with fear, rage, sometimes hatred. But Mohini could cut me down more completely than any other lady ever has. She was always the princess, and she could give me the kind of look that said, simply, 'You crumb!' "

At the towering age of 20, Mohini began to suffer from kidney troubles and her legs started giving out. She was put to sleep. Ted Reed left town on the day it was done.

Speaking of crumbs, I am being described more forcefully by Robert H. Angle, director of the National Associates, and Jessie A. Brinkley, coordinator of one of Bob's departments, the Contributing Membership program. In last month's Mall column I said that the Resident Associates cosponsored the Horticultural Weekend, which included that marvelous ball in the Victorian Garden. Well, I left out the National Associates and specifically the Contributing Membership people, and Jessie and Bob are bigger and tougher than I am, so I'm making this all perfectly clear, as someone or other used to say.

After a lot of thought, I hereby award first prize for Smithsonian sound effects to the Division of Transportation in the Museum of History and Technology. The sounds that emerge from that Southern Railway steam locomotive, Engine 1401, otherwise known as the "Jolly Green Giant," are still untouched by the competition. When the great monster ticks and hisses, standing at the depot, you can almost feel the heat from the firebox. No one would touch one of those gleaming cylinders, so obviously searing hot. And when the first great "chuff" resounds, you'd better clear the track.

I had a talk with John H. White jr., curator of this division, and learned some

"If you have any doubts, ask one of the men who run sports fishing boats in the Gulf," says H. E. Braunig, a Manager of Environmental Affairs at Gulf Oil. "When they want to guarantee their customers a good day's fishing, they head straight for the oil platforms.

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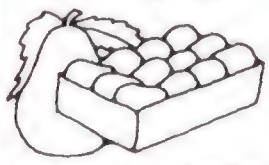

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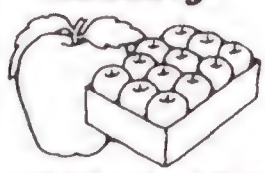

CRISP MOUNTAIN APPLES
Huge red rascals. Grown up here where the cold nights make 'em crackling crisp and juicy. Net weight 5-3/4 lbs

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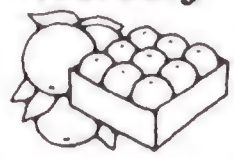

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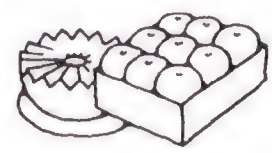

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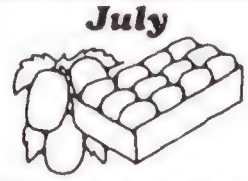

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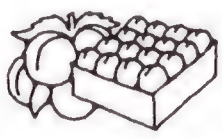

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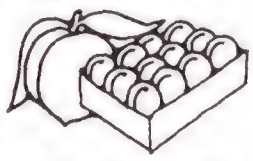

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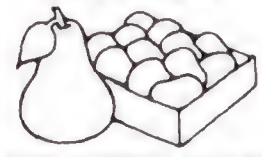

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of the background of these splendid sounds. In the first place, what seemed like miles of tapes were filled with engine sounds, and they were recorded on actual trains. The whistle from 1401 was put on another locomotive and stereo equipment was set up in the baggage car of a train operating on the Southern's Harrisonburg, Virginia, branch as it chugged from Alexandria out to Front Royal, in the mountains. Sound specialist James Nyce, who has since left the Smithsonian, recorded more than 14 hours of it.

In editing it all down, Nyce felt disappointed in the locomotive sounds. Since by then steam had pretty well vanished from the rails, he faced a dilemma. It was suggested that he fill in with a commercial tape of locomotive effects, but in the good old Smithsonian tradition he was outraged at the mere hint of phoniness. A solution was found, however, right in the District of Columbia. At St. Elizabeths Hospital, on the outskirts of Washington, a 50-ton switching engine was still being used to haul coal from the Anacostia River. That's not a very long haul, but it was a real, honest-to-God steam locomotive doing it, one of the last made in this country—the last, in fact, from the old H. K. Porter works in Pittsburgh. The engineer loved the idea of having a recorder aboard.

And the sounds, indeed, were fabulous. Our museum people put speakers in 1401's smokestack and another one under her frame to come on strong with all those rattles and wheezes of the running gear.

So every five minutes, as you stand beside 1401, you can hear her bell clanging louder and louder as she coasts up to the platform; you hear the engine pass, the sound of the air pump and the whimpering in her innards as she stands still; the conductor's call, the first big chuffs, the rattle of the cars as they pick up speed; and finally the distant whistle, fading off in the hills. When it's over you expect to hear the chittering of the swallows coming out from under the broad eaves of the old depot.

The Jolly Green Giant's sound effects were made into a record 11 years ago. It's sold out now, and won't be remade, but for a while it allowed you to carry this wonderfully nostalgic noise home.

September is the last full month in which to investigate *They Have Made a Nation,* a neat little collection of paintings and

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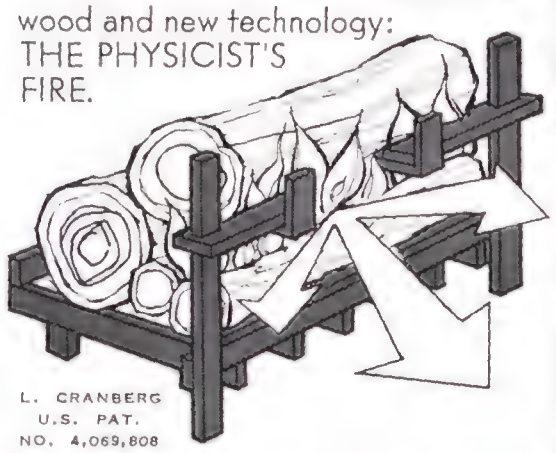


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articles relating to the founding of the Confederate States of America. It fills the end of a corridor on the second floor of the National Portrait Gallery and it leaves town on October 7.

I found it vastly interesting and oddly touching. It's not big. The Confederacy never really got off the ground, back in the early 1860s, so it simply didn't have much to show. And the portraits of its leaders, Jefferson Davis, Alexander Stephens, even Robert E. Lee, are disturbingly bland—faces without quite enough lines, eyes without sufficient worry. Lee is a great hero of mine, but I prefer the photographs of him that were made in Richmond at the end of the Civil War. *There* are the lines and the worry of the patriarch who led those splendid troops on their hopeless mission.

The symbols of the government, also, are strangely unreal. "Jeff Davis, The Right Man, in the Right Place," shouts a political message around a small portrait of the man. What a vapid thing to say about the first President of a self-proclaimed nation that had broken away, for a while successfully, from its considerably more powerful progenitor! When the United States broke away, similarly, 85 years before, I have the feeling there was more fuss made about its leaders. Surely we didn't speak of "Tommy Jefferson, Man of the Hour!"

But I'm probably wrong. I often am. I suppose our memorabilia at that time were pretty vapid too.

—Edwards Park


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*By Robert Conot*

# Twin of a feeble Edison 1879 light bulb casts one-candlepower glow for centenary

*The man of 1,093 patents, including the one covering a pointy-headed lamp, is honored while hundreds of millions of switches snap*

He was 32 in 1879, year of the big discovery.

He was a scruffy Midwestern kid who went to work on the railroad at the age of 12 but could never hold a job. He was brilliant and obtuse, charming and irascible, profane and profound. He hated cigarettes but chewed tobacco incessantly and smoked 20 cigars a day. He was a millionaire in his 30s but couldn't handle money, and it trickled through his fingers. He was a fascinating, frustrating, cantankerous maverick to whom few people who flick light switches on and off, by the hundreds of millions, give a thought. They pay their light bills but never consider their unpayable debt to the man who made possible, a century ago, their power and switches and incandescent bulbs, as well as the myriad other appliances of everyday life.

Although debunkers have questioned his "genius," none can deny that Thomas Alva Edison was a genius at inventing things (no one has topped his 1,093 patents). The hundredth anniversary of his incandescent light will be celebrated by an exhibit—including the bulb on this page—at the Smithsonian's Museum of History and Technology opening September 12, and by a "Centennial of Light" celebration October 21 at the Edison Institute in Dearborn, Michigan. It was to there that Henry Ford, who idolized him and later became his camping buddy (SMITHSONIAN, June 1978), moved Edison's Menlo Park, New Jersey, laboratory—lock, stock and the red earth underneath—50 years ago. And it was at Menlo Park that electric lighting (and scores of other inventions) was created.

Before even moving to Menlo Park in the spring of

One of the first bulbs now has a severed filament.

Replica of an early Edison lamp, which originally gave two to four candlepower, was made 50 years ago.

To save carbonized-thread filament, replica is weakly lighted with 40 volts, for about one candlepower.

Edison, at left center, in cap, and staff held still for rare group photograph in suburban New Jersey lab in February 1880. Out of this lab came—among 295 patents—the phonograph, as well as light.

1876, Edison was a leading inventor in telegraphy. In his Newark workshop he had perfected the "quadruplex," a device that permitted four messages to be sent over one wire simultaneously. Western Union president William S. Orton called it "the solution of all difficulties in the future of telegraphic science." But when the company failed to come up with a satisfactory monetary offer for the invention, Edison muddied matters by making a deal with Western Union's bitter rival, financier Jay Gould. It was to take nearly 40 years to settle the resulting tangle of lawsuits.

Western Union charged that Edison was "insolvent and of no pecuniary responsibility." That he was a bad money manager was plain by then to all around him, including his self-indulgent young wife Mary. No matter how much he earned—and he often earned a great deal—he always spent more, not on luxuries or worldly vices but on chemicals, machinery and equipment, for experimenting was a passion he indulged without regard to cost. He stocked his laboratory like a Noah's ark of chemistry and physics and ordered some of the rarest elements in the world by the pound.

Thus it was that in late 1875—four years before the invention of his lamp—the 28-year-old Edison was once more in arrears to the grocer, the doctor, the liveryman, his employees and various suppliers of equipment. He decided to abandon the high-rent district of Newark and relocate his family and laboratory in a less expensive setting. At Menlo Park, then a depressed farming community 12 miles south of Newark, Edison took out a mortgage on a substantial residence and several acres of farmland. On a gentle hill he began construction of his laboratory.

But the inventor did not change his way of working and living. He continued his odd sleeping habits, dropping off at any time of day or night. And since he had the Victorian aversion to water and a theory that taking off one's clothes changed the body chemistry and induced insomnia, Mary often barred him from her bedroom. At the two-story laboratory there was a small storage space beneath a staircase. Into this Edison

*This article is adapted from* A Streak of Luck, *author Conot's biography of Thomas Alva Edison.*

World's first industrial-research complex, the lab was moved from Menlo Park to Greenfield Village at Dearborn, Michigan, by Henry Ford, who had Edison's chair, right center, nailed immovably to the floor.

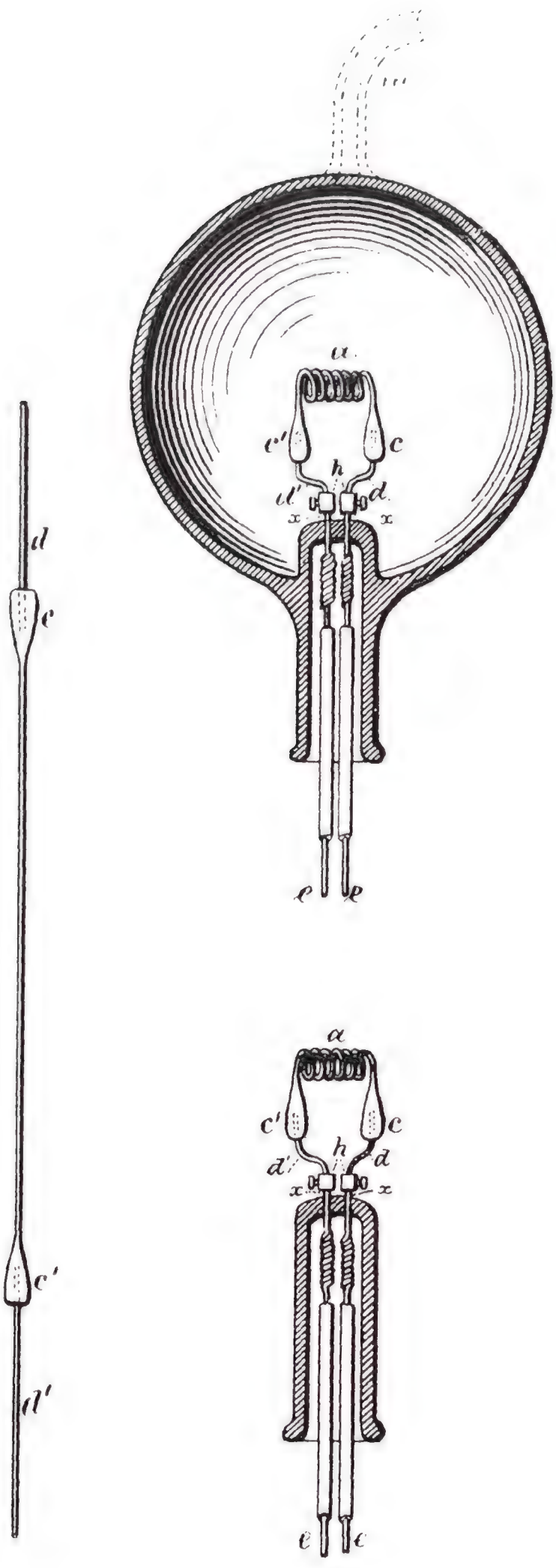
frequently would crawl, pull the door shut, and like a dog curl up and go to sleep on a pile of old newspapers.

At about the very time Edison was making his move to Menlo Park, Alexander Graham Bell discovered that a continuous undulating (wavelike) current of electricity could be used to transmit the human voice. Western Union, which valued Edison's ingenuity more than it deplored his eccentricities, retained him to experiment on the new mode of communication. During the next two years he developed the carbon-resistance transmitter still in use on telephones today.

While seeking a way for Western Union to use the telephone in sending telegrams, Edison discovered what may be the world's greatest and most serendipitous mutation—the phonograph (SMITHSONIAN, May 1978). That sounds could be mechanically recorded and played back was surprising to almost everyone, then including Edison, and was as much in the realm of the unbelievable as if someone today were to come up with a machine that recorded and played back thoughts. A prestigious French scientist, Charles Sainte-Claire Deville, dismissed the phonograph as the trick device of a clever ventriloquist. But after Edison began demonstrating the machine in December 1877, he was hailed as "the Napoleon of Science" and "the Wizard of Menlo Park." To his credit at that time, when he was not yet 31, were 116 other patents.

The following summer an eclipse of the sun was to be visible in the western United States, and Henry Draper, a New York University professor heading an expedition to Rawlins, Wyoming, to observe it, invited Edison to go along and test another invention, a device called a "micro-tasimeter," intended to measure the heat of the sun's corona. Dr. Draper's father, John, one of the pioneers of incandescent lighting, had made a platinum lamp which overheated and burned out. But he had written: "An ingenious artist would have very little difficulty . . . in making a self-acting apparatus in which the platinum wire should be maintained at uniform temperature."

There never had been a mechanical artist more ingenious than Edison. It seemed to some of his companions on the eclipse expedition that the micro-tasimeter was constructed along the very principles




This drawing of first successful incandescent lamp led to issuance of Patent No. 223,898 on January 27, 1880. Eventually Edison held 413 patents in electricity and electric lighting.

needed to keep a lamp from overheating and burning out, and that Edison would have little difficulty adapting it to an incandescent light.

Thus Edison returned to Menlo Park the last week of August in a blaze of euphoria. He headed directly for the laboratory. He didn't want to know what time it was—all his life he had a dislike for watches. Through the night Edison sat, like a meditating alchemist, at a table in the rear of the second-floor lab, where a single gas jet played over his features.

Within a week of Edison's return, he and his principal inventor-associate, Charles Batchelor, made a sketch of a lamp which combined a platinum spiral with an automatic cutoff regulated by the expansion of heated air. Ten days later Edison wrote out his first caveat (a description which could be evidence in seeking priority) on electric lighting for the Patent Office. This described an incandescent spiral regulated by a magnet. During the next six weeks he wrote out four more caveats.

### *An electric threat to the gaslight people*

While Edison didn't know which device would work, he was confident that if one didn't, another would. The reporters came out, and Edison—who had a knack for dealing with the press—told them:

"I came back home and . . . discovered the necessary secret, so simple that a bootblack might understand it. It suddenly came to me, the same as the secret of the speaking phonograph. . . . I made my first machine. It was a success. . . . The subdivision of the light is all right. . . . I am already positive that it will be cheaper than gas, but have not determined how much cheaper."

This excited the gaslight people to the point where they were ready to take their own gas. Hamilton McK. Twombly, one of William H. Vanderbilt's sons-in-law, arrived to talk to Edison about forming an electric lighting company. The Vanderbilts were heavy backers of gaslight companies but wanted to hedge their investments. Edison was provided with $30,000 for experimental expenses.

In order to devise a commercial system, Edison had to place lights in parallel so that they could be turned on and off individually. But in a parallel-lighting arrangement, unlike the commonly known series arrangement, each branch offers an additional path to the flow of the current, so that every added light decreases the total resistance of the circuit and hence increases the amperage, or strength of current. To transmit the kind of amperage required for even a modest system of incandescent lighting, the scientists calculated Edison would need mains of such enormous cross section that there wouldn't be enough copper in the world to light up even one major city.

Edison figured that if he could make a *high*-resistance lamp—100 ohms or more—he would need less current to bring it to incandescence and so could use smaller mains. Of course, nobody had ever made a practical incandescent lamp of high resistance, and little of the technology, machinery or materials to make such a lamp existed.

That's how things stood in mid-December 1878, when Francis R. Upton dragged his valise off the train at Menlo Park to join Edison. The New York interests had hired Upton, who had a master's degree from Princeton and had worked with the German physicist Hermann Helmholtz, to research everything done in the field of lighting. When Upton came to Menlo Park he filled a link vital to Edison's success.

Edison, the empirical experimenter, had been spending—and wasting—a lot of time trying things with no idea how they would turn out. The young physicist brought a much-needed mathematical capability to the effort which had been lacking before. Edison didn't really know how he was doing, for he didn't have any testing instruments. Upton made some of the key ones and started the practice of systematic testing. In personality and thinking, Edison and Upton, whom Edison nicknamed "Culture," were at opposite ends of the spectrum. But they complemented each other. And after Upton arrived, the sparks flew.

By February of the new year Edison had designed an entirely new lamp. This consisted of two globes, one within the other. The outer chamber contained air, whose expansion, when heated, pressed against a diaphragm to interrupt the current. The inner chamber, exhausted of air, held a thumb-sized bobbin of compressed lime around which 30 feet of platinum wire were coiled, providing a resistance of 750 ohms. Batchelor coated the wire with magnesium acetate to insulate it. Edison's idea was that, as the heat increased, the bobbin would incandesce, thus keeping the lamp aglow and reducing the flickering that would otherwise result from the on-off action of the current.

*After a burst of intuition, difficulties arise*

In fact, Edison and his crew couldn't get a good vacuum. The magnesium acetate melted and the wire shorted out. The action of the heated air on the diaphragm was erratic. Lights flickered, and sparks would shoot from the contact points of one lamp, then another, as the circuit was opened by the thermal regulators. The glass shattered and the lamps died out.

Edison was philosophical. "It has been just so in all of my inventions," he had written. "The first step is an intuition, and comes with a burst. Then difficulties arise—this thing gives out and then that— . . . and months of intense watching, study and labor are requisite before commercial success—or failure—is certainly reached."

Here mature inventor displays his "Edison effect" lamps in which current flowed across a vacuum from the lamp filament to an electrode. This idea was to become basic to the electronics industry.

Yet there was more to Edison's success than his tenacity. Of all the inventors of the time he was the only one to have his own fully equipped laboratory, with a small work force (then about two dozen men) to staff it (p. 36). He was, therefore, the head of an inventive enterprise, the archetype of the research laboratory.

Giving up on the thermal lamp, Edison devised, instead, a lamp with an automatic, magnet-controlled regulator. To accompany it, he and Upton constructed a revolutionary new generator. In effect, Edison, who had started with little technical knowledge of electric lighting, was discovering that he not only had to invent a lamp but a system to go with it.

Early in July 1879, he scheduled the first test of that system. The lamps glowed, then turned into bright incandescence. But suddenly a huge spark shot from one lamp, a second from another. The laboratory turned into a Roman candle.

To other men it would have been a disaster. To Edison it was only a setback. He revamped and expanded the control mechanism of the lamp. To the two stationary magnets he added two revolving magnets affixed to a continuously revolving governor. The whole thing looked like a precursor of a Rube Goldberg contraption.

Even though he didn't have a light, Edison got ready

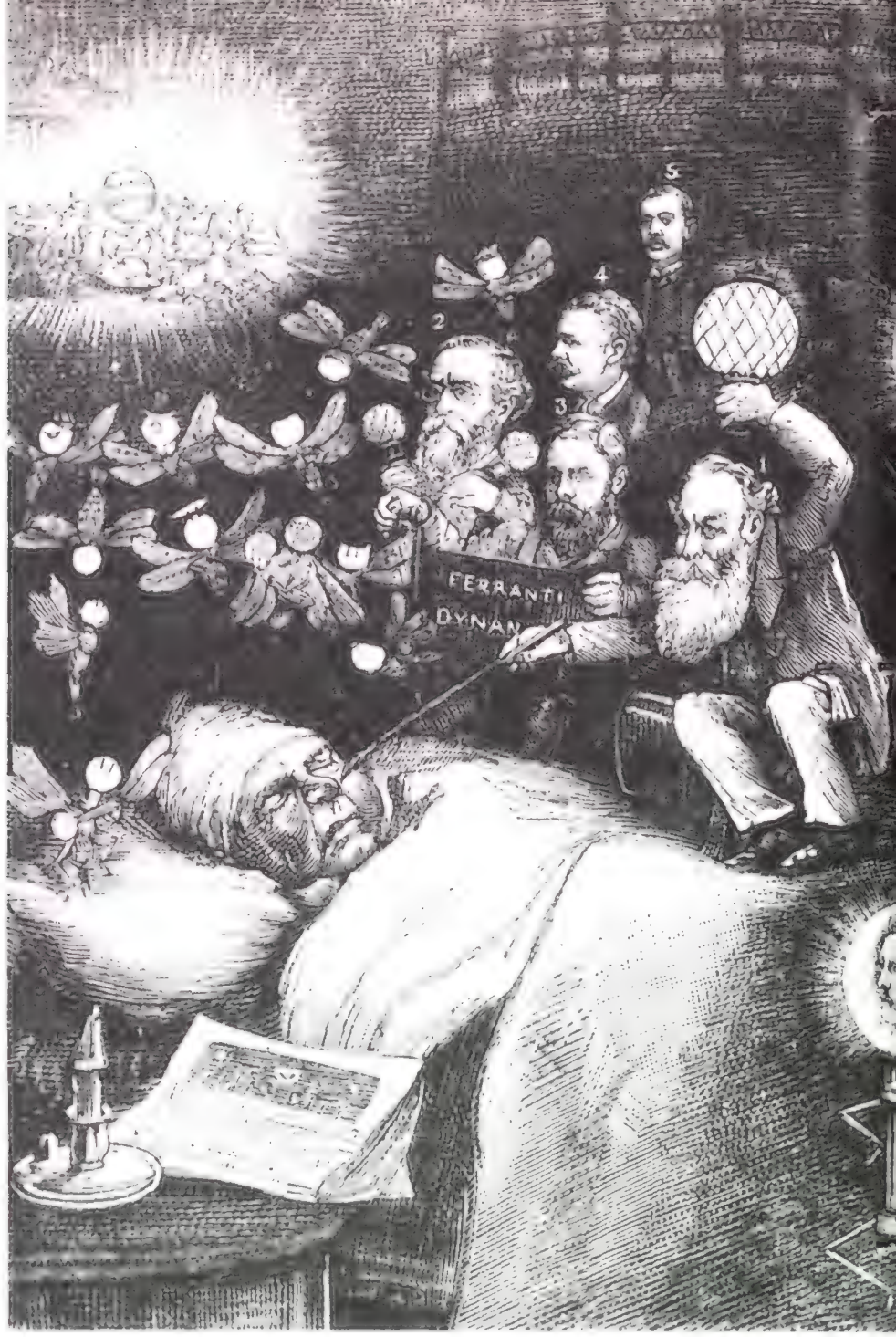
to introduce the generator into industry: it was the only workable element he had. He sketched plans for 24 electric stations in New York to run motors.

Upton, following the disastrous test of the system in July, persuaded Edison that a Sprengel pump must be obtained. This was an arrangement of long glass tubes set up on a vertical plane on a door-sized board. The globe to be evacuated was fused to the top of the tubing. Mercury was dripped down from above. Each globule drove out some of the air as it fell. It was a tedious process, taking the better part of a day to get a vacuum. But the end result was vastly better.

To build his own pump Edison needed a glass-blower. He hired a gangling German immigrant, Ludwig K. Böhm, who had worked in Germany with Heinrich Geissler, a noted instrument maker. Böhm made both a Geissler and a Sprengel pump, and Edison experimented with ways to combine them. Batchelor made bobbins of every conceivable substance and tried coating the platinum wires with 30 different kinds of oxides. By early October Edison was getting a far better vacuum than anyone had ever achieved before. Only one-millionth of an atmosphere of air remained in the upright tubes.

Still, the main difficulty remained. No compound would insulate the wire on the bobbin to keep it from shorting out. Then Batchelor, busy on the telephone experiments, noticed that when some carbon he was working with dropped onto a bit of platinum, it acted as a perfect insulator. Batchelor thought it was due to some silicon in the carbon, so Edison decided to coat a platinum spiral with silicon.

On October 13 Edison got a light of one candle-power with two-ohms resistance from a silicon-coated platinum spiral in a vacuum. He had read earlier in the *Scientific American* about Joseph Wilson Swan's experiments in England with carbon sticks. Although




The zany aspects of the new era are reflected in cartoon (above) and film (below). An 1884 French caricature depicts nightmare of a gas producer upset by what electric light will do to his business. Edison is at top center, 12; William and Werner

Mickey Rooney ponders future as *Young Tom Edison,* in a 1940 MGM film about inventor's early years.

Siemens, German-born electrical engineers, are 7 and 6; Russian arc-light inventor Paul Jablochkoff is 18; Hiram Stevens Maxim, one of many inventors who copied Edison's bulb, is 13; Joseph Wilson Swan, English chemist-physicist, riding in the swan, is 8.

Spencer Tracy as *Edison, the Man* (same studio, same year) with gold indicator, a kind of stock ticker.

he had long before decided there wasn't any future for carbon in the electric light because it just disintegrated, Edison's curiosity was piqued about Swan's own inability to perfect the use of carbon in lamps. He had Upton test an eight-inch-long piece of carbon 1/17th of an inch in diameter. The stick remained dark in the center but glowed at both ends.

*Carbon, the miracle ingredient*

When Upton measured the resistance, he found that it decreased as the carbon incandesced. This was entirely unexpected since metals increased their resistance as they grew hotter. Edison kept wondering what he'd discovered, for if carbon did in fact decrease its resistance as it grew hotter, and if it could be maintained in a vacuum, then might not carbon, which could withstand temperatures of 5,600 degrees F, contain its own built-in balancing mechanism? In that case, might the current not have to be interrupted and couldn't all the regulatory gadgets be jettisoned? Could a *high*-resistance filament be made of carbon?

On October 19, Upton placed a stick of carbon in the globe. Another of Edison's assistants climbed a ladder and started dripping mercury into the pump. Having earlier discovered that filaments contain gases, Edison periodically applied current from the battery in order to drive out those gases. Then he made a permanent connection. The carbon stick glowed brighter and brighter. When Upton measured the intensity of the illumination, he found it to be 40 candlepower. No platinum lamp had ever incandesced that brightly. Yet the carbon rod, its temperature no longer controlled by any mechanism, didn't overheat.

Edison realized that in getting the almost perfect vacuum he was working with carbon in a new medium. In an almost complete absence of air, despite enormously high temperature, carbon would not burn. Still, he didn't know if a high-resistance lamp could be made out of carbon because the rod's resistance had been only two ohms.

To raise the resistance, Edison had to increase the length and thinness of the filament. Edison set Batchelor to work making carbon spirals similar to the platinum variety. But when they were fastened to the platinum lead-in wires to be baked and carbonized, contraction always caused them to break at the junction with the platinum.

When Batchelor had no success for two days, Edison suggested the carbonizing of some plain cotton thread instead. On October 22, he started experimenting with the carbonized, horseshoe-shaped thread, fastened it to the lead-in wires and inserted it into the globe. The thread gave a light of only half a candlepower and soon flashed out. But the resistance was 113 ohms!

That was when Edison finally knew he had something. In separate tests he had discovered that in an almost perfect vacuum carbon is stable, will put out a good light and, if the filament is made thin enough, will give a high resistance. He didn't have a lamp, but his experiments had shown that a parallel system of incandescent lights was *theoretically* feasible.

Edison plunged in to test filaments of everything he could think of: fishline, cotton, cardboard, tar, drawing paper, celluloid, coconut hair, wood shavings, cork —even visiting cards. It was frustrating. The spirals either broke at the contacts or developed hot spots and flashed out. On November 4, Upton grumbled that the electric light was a "continual trouble for as yet we cannot make what we want and see the untold millions roll in upon Menlo Park. . . ."

The next day, however, Batchelor had a new bulb ready. He had taken a piece of cardboard used for mounting minerals and cut it in the horseshoe shape of the threads. The horseshoes were boiled in sugar and alcohol, then carbonized and placed in an evacuated bulb. Between November 13 and 18 the lamp burned, on and off, for 16 hours.

In late November, Batchelor made a steel cutting frame with which he could shape the horseshoes much more evenly, and tried making some lamps out of Bristol board, which had fewer impurities. They provided light of about 16 candlepower.

"My light is perfected," Edison exulted.

Workmen strung the bare wires from the windows of the machine shop to Edison's and Upton's houses. There they were attached to the gas pipes, and the bulbs were placed atop the fixtures.

By Christmas Day, lights had been put up in the laboratory, the railroad station and a half-dozen houses. That night the whole system was tested for the first time, and on New Year's Eve 3,000 people poured into the village. The yellow-orange glow of the lamps (p. 34) formed a soft beacon directing the travelers to an oasis in the night—they marveled at how the light did not flicker, at how there was none of the odor connected with gas or with kerosene. Reporters sent out their dis-

In this commissioned painting of the 50th anniversary on October 21, 1929, Edison (1) faces an assemblage of other notables. They include President and Mrs. Hoover (2 and 3), Marie Curie (4), George Eastman (5), John D. Rockefeller jr. (6), Henry Ford and his wife, Clara (7 and 8), Smithsonian

patches over the telegraph wire that ran directly into the second story of the laboratory. Menlo Park flashed onto the consciousness of the world like a remote location made famous by battle. Edison had captured the imagination of people everywhere; in a heroic century of invention he was acclaimed the master inventor.

October 21, 1979, when the centennial of the incandescent light will be celebrated, is an arbitrary, even misleading date. In fact, it was not until a month later in 1879 that Edison had a viable lamp. But whatever the date, never before or since has an invention had such an impact on culture and society or led to so many other inventions. Between 1880 and 1882, Edison laid the foundation for the entire electric-light and power industry. He devised sockets, switches, fuses, cutouts, meters, chandeliers (called electroliers) and underground mains. He erected the first central power station in New York.

Lighting systems were installed in plants and factories throughout the world—they enabled manufacturers to operate around the clock and were a factor in leading, ultimately, to eight-hour shifts in place of 12-hour workdays.

Home life was even more affected. Before electric lighting, it was difficult for people to read, sew or pursue other home hobbies such as carpentry after dark. As one electric appliance after another was developed, women's tasks were lightened. Electricity, Edison thought, was helping women to emerge into "real sex independence, and the result is a dazzling one."

Edison was 82 when Henry Ford staged a reenactment of the discovery of the incandescent lamp October 21, 1929. President and Mrs. Herbert Hoover, who went to Dearborn with hundreds of other guests (below), gave up their seats of honor to the Edisons. The inventor died two years later; if he could attend the forthcoming centennial he would be 132. Such unending life has yet to be invented, but never mind: Edison's genius lives on. He was the architect of more aspects of our civilization than any other man, a visionary whose notion of a world run by electricity has been fulfilled.

Secretary Charles G. Abbot (9), Will Rogers (10), National Geographic president Gilbert H. Grosvenor (11), Mayo brothers Charles and William (12 and 13), Harvey S. Firestone (14), Henry Morgenthau (15), Orville Wright (16), Charles Dana Gibson (17), *N.Y. Times* publisher Adolph S. Ochs (18), Jane Addams (19).

Courtesy of Henry Ford Museum, Dearborn

# With a little help from science, panda has blessed event

*The Chinese have succeeded with artificial insemination, and now the Smithsonian's National Zoo is preparing to try next spring*

Everybody loves giant pandas, the cuddliest 300-pound animals that ever lumbered into the hearts of children and not a few of their parents. But pandas themselves often have no use for each other: they are among the most difficult animals to breed in captivity. The Chinese, who have the most pandas and the most experience in handling them, have apparently had only ten births (16 cubs) in captivity over the years. No pandas have ever started life outside China.

Now the Chinese have turned to artificial insemination as the best way to bring "good" males and "good" females together, and other zoos around the world are preparing to follow that lead. The pictures on these pages, obtained in China, are of a female panda cub born a year ago following the artificial insemination of Juanjuan, an eight-year-old female, at the Beijing (Peking) zoo the previous April. The father is Loulou. (A twin of this cub died three days after birth. Because a mother panda holds her baby with one foreleg while it nurses—and it is difficult to carry more than one—only a single cub usually survives, at least in captivity.)

Weighing only a quarter-pound at birth and described as looking like a white hairless mouse, the surviving baby—Yuanjing—increased its weight tenfold in the first month. After eight months (pp. 46-47), she is no longer a mouse but a panda, and a robust adolescent at that.

At Smithsonian's National Zoo, Director Theodore H. Reed and his staff are getting ready to try artificial insemination with giant pandas Ling-Ling and Hsing-Hsing, which arrived there in 1972 (SMITHSONIAN, June 1972) following President Nixon's visit to China. The pair has long since reached maturity, but, largely

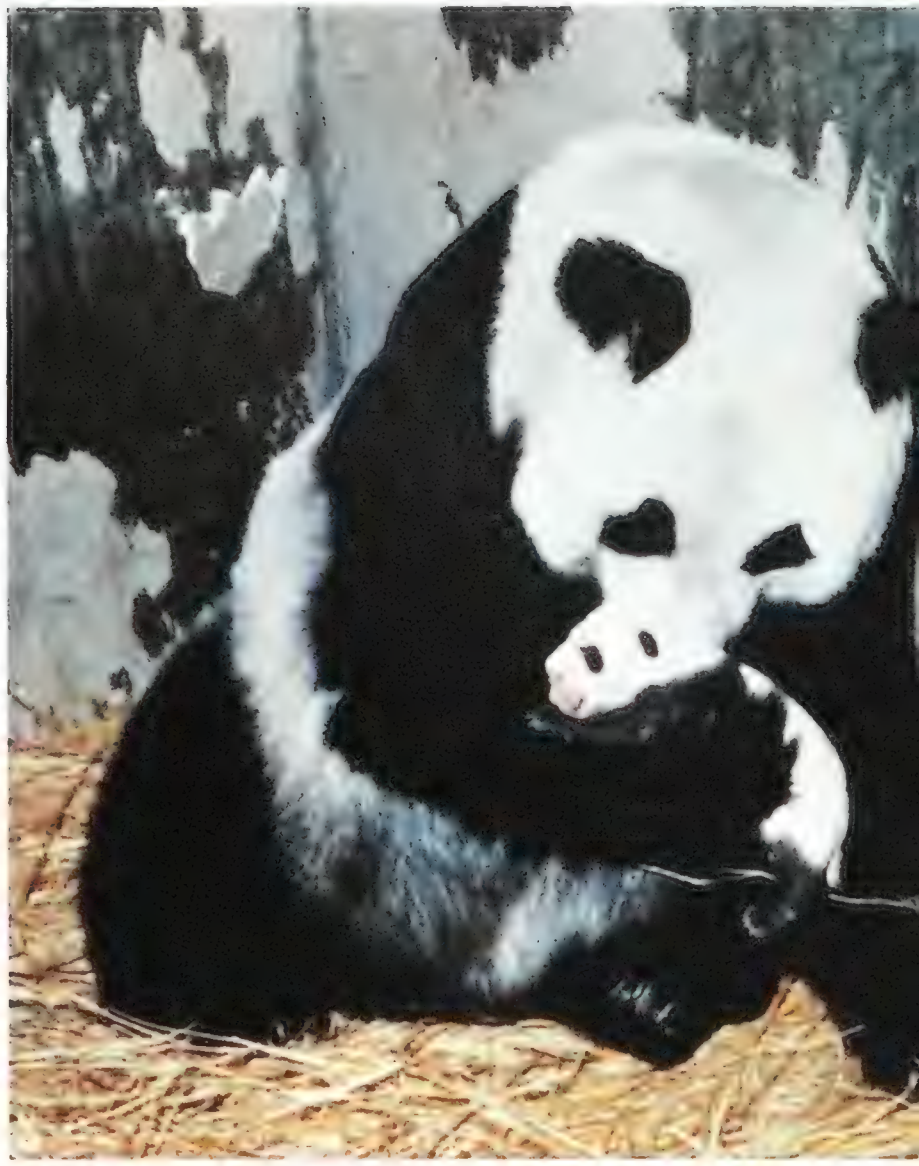
Here just a month old, Yuanjing, the baby panda, naps in the arms of its mother, Juanjuan, eight years

because of ineptness by the male, Hsing-Hsing ("aberrant stance" is the way curator of mammals William A. Xanten jr. describes the problem), no pregnancies have occurred.

Last June, zoo veterinarian Mitchell Bush (SMITHSONIAN, October 1978) and a highly skilled team twice anesthetized Hsing-Hsing and extracted sperm. That sperm, which tests show to be fertile, is being stored at minus-320 degrees F in liquid nitrogen until next spring when Ling-Ling comes into heat again. More sperm will likely be taken in March. Then, if the normal mating appears to fail, the zoo team will artificially inseminate Ling-Ling.

The Washington pandas have fared no better than perhaps the most famous of all panda couples in the

old, at the Beijing zoo. For the first three months, it mainly nursed and slept in its mother's lap.



Bath time means a licking all over for Yuanjing. Unlike some zoo animals, pandas make good mothers.

Western world, Chi-Chi and An-An. In the mid-1960s, Chi-Chi, a female at the London zoo, and An-An, a male at the Moscow zoo, took turns flying back and forth for trysts at the appropriate times—but to no avail. The thinking now is that Chi-Chi was too attached to her keeper and that An-An was simply too fat to mate.

At the moment, there are an estimated 25 to 30 pandas in Chinese zoos. In the rest of the world's zoos, there are one or two in North Korea and pairs in London, Madrid, Mexico City, Tokyo and Washington, as well as a surviving female in Paris.

The pair in Tokyo seems closest to producing cubs naturally. Zoo officials there say the pair mated in 1977 but produced no offspring. In 1978 they mated again, and the female did appear to become pregnant; it is assumed that she aborted. They mated again this year and the female may well be pregnant, although no one knows yet.

Every Western zoo would like to be the first to produce baby pandas, Dr. Reed notes, but there is also something real to be said for being second. Whichever zoo does produce the first should be able to provide critical information to the others because they all share their data.

In the wild, the Chinese believe there are some 200 pandas in Wang Lang Reserve in Szechwan Province, from which all captive pandas have come. There is no estimate for the rest of China, but it is now agreed that there are no longer any wild pandas outside China. The days are long gone when Westerners—Theodore Roosevelt jr. and his brother Kermit, sons of the President, were the first in 1928—went to the Chinese interior to shoot pandas for trophies.

Well-armed with claws and powerful jaws, the slow-moving pandas have few natural enemies, and had even fewer before human hunters appeared in their forests, but the animals probably were never numer-

*Photographs by* China Pictorial

ous. They are solitary creatures, except when mating or with young, living in mountain wildernesses at altitudes of 3,000 to 12,000 feet. (The National Zoo pandas retreat to air-conditioned quarters whenever the outside temperature hits 70 degrees F, as it does in Washington for months at a time.)

Pandas eat vegetation, principally bamboo, but in the wild are also possibly omnivorous, eating bulbs, fruits, berries and small vertebrates as well as bamboo. In London, Chi-Chi enjoyed roast chicken. They eat much as people do, always bringing the food to their mouths rather than lowering their heads to the food. Their real thumb, or fifth digit, lies alongside the other four and acts with them. But a "sixth digit," really an extension of the wristbone covered with a tough, fleshy pad, acts just like an opposable thumb and enables the panda to grasp the bamboo stalks.

During the mating season they vocalize often (the sound is described as a bleat), scent mark more frequently, and fight a lot. The Chinese say, in fact, that some of the couples they have exported may not be breeding simply because the individuals are incompatible. On at least one occasion in the past, a pair of pandas did not mate for an even more basic reason: they were both of the same gender. It is extremely difficult to determine a panda's sex. The Chinese sent Ping-Ping, which they believed to be a female, to the Soviet Union in 1957. Only when the animal died in 1961 was it discovered to be a male.

Hsing-Hsing, the Washington male, has an amusing scent-marking technique: with his front feet on the ground, he "walks" his back feet up a wall until he is standing on his "hands," and then marks the wall.

He and Ling-Ling have had some fights that Bill Xanten says "scared us to death." In 1977 Ling-Ling hurt a paw enough so that she was limping badly; her keeper assumed it was the result of a fight. Then in 1978, after she and Hsing-Hsing had been together for an hour and 45 minutes, the staff saw a battle brewing, but were unable to separate the pandas. The pair, left together for the night, engaged in a series of short spats but did not seriously injure each other.

This year both pandas were trimmer, the result of a yearlong diet that saw Ling-Ling drop from 296 to 240 pounds. Shorter mating encounters, lasting only 30 to 45 minutes, were tried. The Chinese had advised Dr. Reed and members of his staff who visited Beijing last year that if the pandas were to breed, they would do so in about the first 15 minutes. But once again they failed, and natural mating may at this stage have become impossible. Ling-Ling herself has begun taking an aberrant posture in an effort to compensate for that of Hsing-Hsing, compounding the difficulty. Artificial insemination may be the only way to go.

These pictures of young Yuanjing show why pandamania has been endemic in the West—America's first live panda arrived in San Francisco in 1936—and why animal lovers, be they zoo directors or just typical families in Beijing (opposite) or Washington, look forward so eagerly to birth announcements.

Eight-month-old Yuanjing plays in enclosure where she has been on exhibition since last April.

Visitors at Beijing zoo watch while the rare baby panda holds itself upright on a chain-and-tire seat.

# Sign your car and catch a car thief.

Last year Americans bought twenty million automobiles, and stole one million more!

Now *paying* for cars—and car insurance—is too hard to let

*stealing* cars be that easy. And some pretty primitive precautions can help:

The owner's name, scratched into the inside of the gas cap, was evidence needed to reunite a Texas man with his stolen pick-up truck.

A Detroit Cadillac owner helped police identify his stolen car by remembering *birdseed* spilled under the back seat. (The thief is now roosting in the federal coop.)

New laws requiring carmakers to put identification numbers on various parts should be passed.[2] In the meantime, your business card, dropped down window channels into doors or secreted in places only *you* will remember, will serve the same purpose.[3]

Even simpler than "signing" your car is locking it. In Boston (where 1 out of every 35 cars was stolen in 1975) a "Lock-your-car" campaign run by the National Auto Theft Bureau helped cut theft 26% in two years.[4]

And before you buy the expensive options that'll make your car *more* attractive to car thieves, buy the anti-theft device options that'll make it less attractive.[5]

Auto theft can be cut. Auto insurance costs can be controlled. Don't underestimate your own influence. Use it, as we are trying to use ours.

# Ætna wants insurance to be affordable.

[1] Auto theft is no longer a "cottage industry": it's a huge racket that costs the American people $2 billion a year.

[2] The Motor Vehicle Theft Prevention Act of 1979 now in Congress would do just that. And make trafficking in stolen cars a Federal offense, too.

[3] The National Auto Theft Bureau also suggests: using a vibrator pencil, etch the vehicle identification number in several hard-to-find spots. Use your imagination: the more unique your hiding place, the more exasperating to a thief!

[4] About 20% of stolen cars are driven away with the keys the owner left *in the ignition;* in another 20%, keys are transparently "hidden" above the visor, in the glove compartment or under the driver's seat. Locking your car won't protect it from a professional thief, but it will protect it from the joy-riding teenagers who account for many thefts.

[5] These devices only slow down a professional thief, but the more time it takes him, the more chance he'll be caught. Locking systems, cut-off switches and security alarms are all available at auto supply stores.

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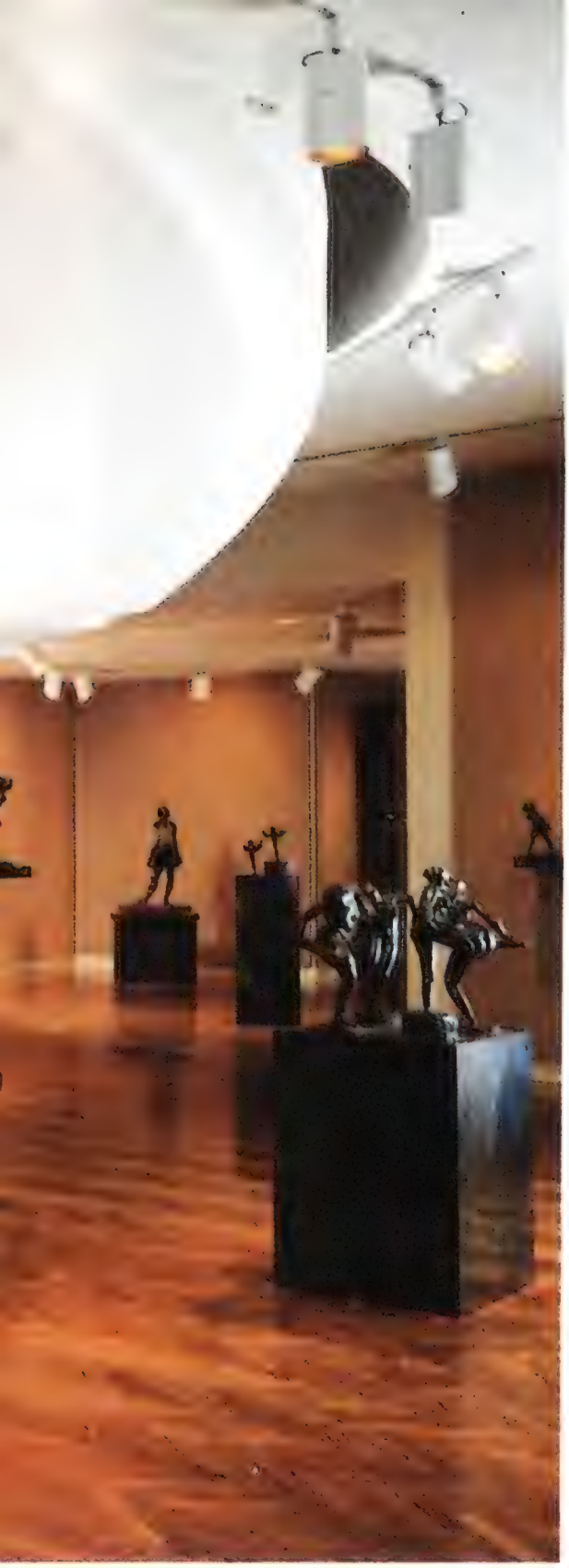
*By Robert Wernick*

# Norton Simon's zeal for the best and its results

*The industrialist approached the world of art the way he did business—with a strong will and money, and came up with a fine museum*

Norton Simon in 1954, still in his 40s and already a self-made millionaire, a great snapper-up of industrial enterprises, decided it was time to stop living in rented houses and bought himself a home of his own in the Hancock Park section of Los Angeles. It was a modest enough house for a Los Angeles millionaire, but everything inside it was going to be the best. In a lifetime of getting and spending, he had not had time for art. But he knew what he didn't like, and he was determined to know more.

New York was where you learned about art in those days, so he went to New York. He cultivated people like Ben Heller, the collector, and Helen Frankenthaler, the painter, and with them spent relentless days touring the art galleries of Manhattan, observing, listening, posing questions, evolving his own canons



A collector and his prize: Norton Simon displays Rembrandt's *Portrait of the Artist's Son, Titus.*

The Degas gallery has all but two of the 72 foundry-numbered casts made from wax models of series on dancers, nudes and horses. Paintings by Degas include his copy of a Poussin, behind banister.

of taste. He bought a Hans Hofmann for $1,500, a Pissarro, a Gauguin.

None of the three belongs to him now. He sold the Hofmann after a couple of years for $18,000 (he might have got $80,000 if he had waited a few years longer, but he was never a mere speculator; he buys and sells at the dictates of his long-range judgment). The two others went to his wife, Lucille, in their divorce settlement. Still, they mark a turning point in his life, the start of his metamorphosis from superindustrialist to supercollector.

As the years went by, he prowled the museums and galleries of Europe with Richard F. Brown, then director of the new Los Angeles County Museum of Art and now head of the Kimbell Art Museum in Fort Worth. He bought extensively but always carefully; his collection swelled into hundreds, then thousands, of works of art, bought in about equal quantities by his family-owned Norton Simon Foundation or by the Norton Simon Inc. Foundation set up by the giant conglomerate he founded and ruled. They came to overflow the halls of the Norton Simon Museum of Art in Pasadena, barely five years old but already recognized as one of the finest art museums west of the Mississippi. Every picture or statue is there and hangs or stands where it is because Norton Simon wanted it there. His restless search for excellence seems to be a presence pacing up and down its halls.

He paces up and down them in person often enough. He has in recent years given up active control of his corporate empire, and though he has by no means lost interest in making money or in public activities, an

*Photographs by Rob Lewine*

Indian *Shiva* is surrounded by, from the left, Jan Metsys' *Susanna and the Elders,* Rembrandt's *Titus,* Rubens' *David and Goliath* and Zurbarán's *Saint Ignatius of Loyola* and *Birth of the Virgin.*

increasing part of his time is spent on his museum.

"Does the Raphael *Madonna* look right over here? Shouldn't we wall off that window which we don't need anyway, put the Raphael and the Lorenzo Monaco there, with the Filippino Lippi in the center?

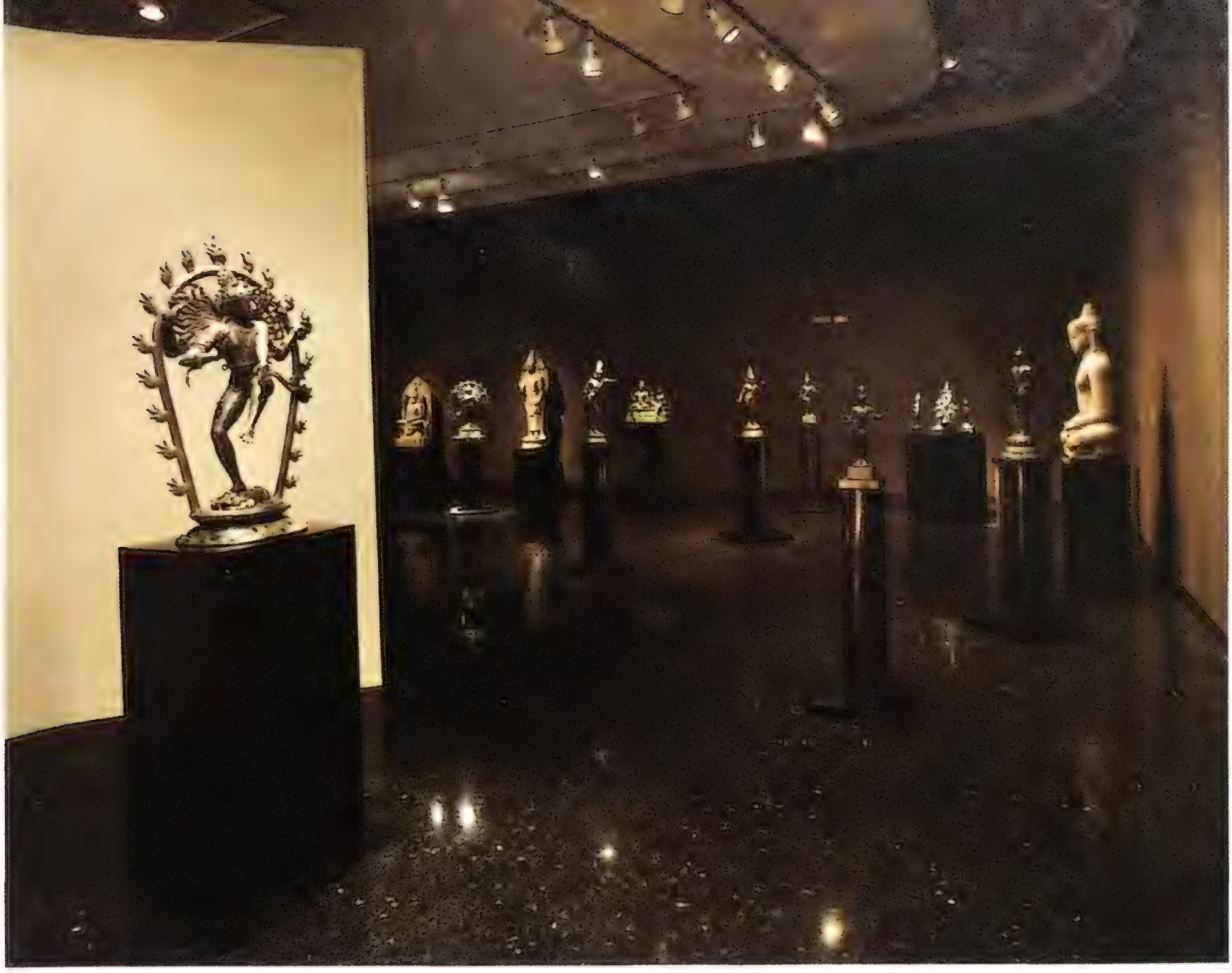
"Look at the Lorenzo Monaco. I tell Jennifer [Jennifer Jones the actress, his second wife]—you know she was brought up in a Catholic family for part of her childhood and she has ambiguous feelings about religous art—I tell her, forget the iconography, look at the design, look at the Virgin's robe flowing over the chair, it's extraordinary, there isn't anything like it in modern abstract art . . .

"Now look at this, this is probably the best Boudin in the world, this little beach scene. It is worth anything you can pay for it. Now, above it, we are trying out this little painting of a bunch of grapes, it's by Trouillebert, he was a 19th-century French painter that no one has ever heard of, and he wasn't much good. But these grapes are very fine, don't you think? I can get the picture dirt cheap; honestly, how do you think it stands up to the Boudin? . . ."

The museum is open to the public only four half-days a week, Thursday through Sunday. On other days it is available for conducted tours, shepherded by well-trained graduate students. Or it is available for the often massive hangings and rehangings which are one of Simon's delights and which furnish a subsidiary source of delight for the visitor. For you never know from one day to the next what is going to be here. Physically, the museum is fairly small as major museums go; it can hold comfortably fewer than 2,000 works of art, while an additional 3,000 remain in the vaults until Simon is convinced that further construction is desirable.

And these are all works of the first quality. There are no dull stretches here, such as you find in most museums. There are great names here, from Raphael and Cranach to Cézanne and Picasso. There are famous masterpieces like the Zurbarán still life of oranges, lemons, a rose, a cup—all fixed for eternity in the uncompromising light of 17th-century Spain.

There are pictures that mark turning points in the lives of their creators, and there are hallucinating pic-



In forefront of South India gallery is magnificent *Shiva,* from Shivapuran, which India said had left the country illegally. After negotiations, Simon agreed to return it to India following ten-year loan.

tures like Magnasco's *Interior with Monks* (pp. 60-61). There are opulent pictures like the Tiepolo ceiling representing Virtue and Fortitude. There are dramatic contrasts, as of a Cézanne flower piece and a copy of it by Odilon Redon, who admired it.

There are new insights into familiar figures. There are three rooms full of Degas *modèles,* the only numbered bronzes cast directly from waxes left in his studios when he died—dancers, bathers, horses caught by Degas' snapshot eye at a moment combining charm and grace and awkwardness.

There are paintings here that were picked up for a song, and there are others which cost Simon more than a million dollars. One of the latter, Rembrandt's unfinished portrait of a youth, probably his son Titus, was acquired at a well-publicized auction at Christie's in London in 1965. But the headlines do not interest Simon particularly; he will pay as much or more for works by artists the general public (or even the average art lover) has never heard of. Last year he paid more than a million dollars for the *Branchini Madonna*—the central panel of an altarpiece done originally for the chapel of the Branchini family in the church of San Domenico in Siena by Giovanni di Paolo, who worked in that city in the early 15th century (p. 60). He never achieved the glory of his Florentine contemporaries. Yet this picture is a masterwork. Humanity and divinity are almost miraculously balanced.

Simon was willing to pay twice as much as he did for this painting. The reason he got it for a little more than a million was that it represented a considerable gamble. The painting had been restored sometime during the early 20th century. Notably, the Virgin's blue robe had been repainted in a color which, over the years, had turned muddy and obviously was not original. No one could be sure what was under the restorer's work—the original might be badly damaged or non-existent and the whole work a near-total wreck. But the gamble paid off: a very light cleaning revealed the old coat virtually intact, as fresh and clear and

*Robert Wernick lives in Paris and has written many* SMITHSONIAN *articles, the last of which, about the Maeght Foundation, appeared in the June 1979 issue.*

The Norton Simon Foundation

Francisco de Goya's *Saint Jerome*, an intense study in single-figure solitude, was painted c. 1799.

luminous as it was when Giovanni di Paolo mixed his powdered lapis lazuli in egg yolk 550 years ago.

Making correct judgments in this world demands, as Simon says, the skills of both the businessman and the scholar. Simon was widely criticized when he sold most of his great collection of French Impressionists in 1969 at a fabulous profit. It was suggested that he was more interested in profits than in painting. From his point of view, the sale was not only sensible but necessary. The market prices for Impressionists that year were inflated beyond reason. And his interest had broadened; he needed money to acquire Old Masters, which never come cheap. It is estimated that over the years his paintings have cost him about $100,000,000. If they were put on the market today, they would probably fetch almost ten times as much.

But then Norton Simon has always been very good at figures. He started proving it in high school in San Francisco, when, by selling towels and paper goods after school, he built up enough of a stake so that he could take a plunge into the stock market. He came out of the 1929 crash with $35,000 in his pocket. In 1930, he heard of a little orange-juice bottling plant in Fullerton, California, which had gone bankrupt. He bought it for $7,000, reasoning that the machinery just as junk was worth more than that. But he didn't sell it for junk.

Simon was born with a rage for rightness. There are many ways of doing any particular thing, most of them quite bad, quite wasteful, but one of them—the Norton Simon way—not only is right but profitable. He felt sure there was a better way of using the bottling machinery than the bankrupts had been aware of. He switched to tomato products, cut costs, learned to run the business with flair and precision, and in ten years or so he was able to sell out to Hunt Brothers, a canning concern, for almost three million dollars. He used the money to buy up Hunt stock, and one fine day the Hunt people discovered, somewhat to their displeasure, that they had a new owner. Managed the Simon way, the company began to pull in spectacular profits. Toward the end of the war there was a sellers' market in tomato products, the grocery chains needed them desperately, and suppliers like Hunt could demand very favorable contracts and high prices. When the war and the wartime shortages ended, the grocers suggested that it would be a gentlemanly thing to revise the prices downward. Simon, perhaps wondering how often the grocers yielded to similar requests from their customers, insisted on upholding the sanctity of contracts. The grocers were angry; some of them were heard to swear that they would never touch a Hunt product again. Simon responded by devoting more money to advertising than anyone in the business had ever dreamed of doing before. He took out 52 consecutive four-color full-page ads in *Life* magazine, and created such a demand for Hunt tomato sauce that the

The Norton Simon Foundation

Edouard Manet's *The Ragpicker,* painted c. 1869, is a dramatic study in another kind of isolation.

grouchiest grocers had to stock their shelves with it.

With Hunt profits he began buying his way into other companies. He was not the traditional raider; he was not interested in gutting other people's businesses and getting out. He was interested in finding an established company producing an established product, one which had everything going for it except that it was badly run. Simon would discreetly buy up big blocks of shares in such companies till he was ready to present himself at a meeting of the board of directors and demand that some changes be made, changes which might include putting him or his associates in charge of the company. These meetings were not always pleasant. Simon's best friends will not credit him with diplomacy. "He has a unique faculty," says a man who worked with, or rather against, him for years on the Board of Regents of the University of California, "for making a roomful of people know he thinks they are a bunch of ignorant slobs."

When it came to a vote, Simon generally had the shares, and generally he got hold of the company. In the course of time this led to the foundation of Norton Simon, Inc., one of the largest of American conglomerates and one of the few that has never had any major financial or legal troubles.

As more and more of the profits from these enterprises went into works of art, the problem arose of where to house them. His own home was overflowing with masterpieces, but he felt the primary aim of a collector should be to share his enthusiasms and discoveries with the public. He began to think of grouping his art permanently in a place where he could watch over it. He let the Los Angeles County Museum of Art have many works of art on long-term loan, but this was unsatisfactory, largely because the museum had other millionaires on its board of trustees, opinionated and self-assertive men who delighted in disagreeing with one another. Simon tends to work best in a milieu where, as he once put it, "I am the consensus." One day Pasadena appeared on the horizon.

### *Taking over a museum*

The Pasadena museum was ripe for a takeover. It was suffering from an acute form of the illness which Simon sees afflicting many museums, including some of the biggest: reckless overexpansion, sloppy management and a sublime faith that there will always be someone to make up the deficits. The roof was leaking, the air conditioning was breaking down, unpaid debts were piling up, the trustees were having to liquidate some of their prized possessions to keep going.

Simon and the trustees reached an agreement which provided in substance that he would take over both the debts and effective control of the museum. He repaired the structural defects and he reorganized the internal management according to the sound rules he had followed in his businesses and which he thinks all museums will have to follow in this post-Proposition 13 day of reckoning. He kept a firm control of major decision making, but he delegated the day-to-day running of the museum to a typical Simon staff—small, bright, young, totally devoted to the boss but not a bit afraid to speak up to him. "I am dominating but not autocratic," he says, and he is glad to give subordinates credit for the ideas he has accepted from them. All administration is in the hands of Alvin Toffel, an ex-SAC pilot and ex-astronaut candidate, who sees that everything is done simply and promptly. There are only two full-time curators, young women named Sara Campbell and Selma Holo, who were barely out of graduate school when Simon found them and brought a graduate-student dream to life by putting them in charge of several hundred million dollars worth of Old Masters.

Everything is shipshape now. The building is on a 75-year lease from the city of Pasadena, which pays for the upkeep of the grounds. Acquisitions are paid for by the Simon foundations. With the help of contributions, a matching fund from the National Endowment for the Arts and a rather steep $2 adult admission fee (which, however, includes a free reproduction and a discount at the extremely well-stocked bookstore), the museum can meet its operating expenses.

There is still some grumbling about the change in purpose and direction which the Simon takeover represented. The original Pasadena Museum was supposed to be devoted to contemporary art, of which it had a big if not wholly distinguished collection; it was especially hospitable to California painters, and had

Long corridor ends dramatically in a burst of glory with Tiepolo's *Triumph of Virtue and Fortitude.* Below it, Aspetti's *Pair of Firedogs Surmounted with Allegorical Figures of War and Peace.*

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Group of visitors touring museum gaze down the length of the reflection pool within sculpture garden. Sculptures in the pool are Aristide Maillol's *Mountain, Air* and *River*.

a remarkable group of German Expressionists. Simon is glad to have the Expressionists but the splotches and stripes and Brillo boxes of many recent schools leave him cold. He recognizes a moral commitment to devote a good percentage of his space to modern art, which he interprets in a somewhat latitudinarian way as going back to 1900. But he feels it is silly to try to keep the kaleidoscopically changing trends of today and the day before yesterday under the same roof as the established Masters of the past, and he hopes to work out a deal under which the bulk of the contemporary works will go on long-term loan to some other museum where there will be the space and the enthusiasm to show them properly.

His constant quests have led him to distant times and lands. Jennifer persuaded him to go to India shortly after they were married, and it opened a vision of another world. His first acquisition was a splendidly ornate 18th-century chess set. He went on to acquire a couple of hundred pieces of sculpture from ancient India, Thailand, Cambodia. One of them threatened for a while to create a major scandal. This was the gem of his Oriental collection, a Nataraja, a 44-inch bronze figure of the god Shiva dancing. During the Chola empire which flourished in the 10th and 11th centuries in southern India, Shiva outshone all other gods. Shiva is shown dancing out the creation of the world, sending out the pulse of life with finger cymbals in one of his hands (p. 53). He is perceived simultaneously destroying the world with a ring of fire and preserving it.

Simon paid a million dollars for this Nataraja through a dealer in New York. He believes it was the figure of a million dollars which got the Indians excited and led them to cry that national treasures were being looted. Like much Indian religious art in the marketplace—in fact, like a lot of religious art anywhere—this statue had a past which did not bear too much looking into. After much public controversy, a friendly and happy ending was devised. Simon agreed to send the Nataraja back to India after displaying it at his museum for ten years. Indian authorities gave their approval to the rest of his collection, which experts declare to be among the best on this continent.

This art has not so far been especially popular with visitors to the museum. Simon is not concerned. Immutable standards count for more with him than popular taste. He believes in immutable standards; though Reaganite Republicans in California think of him as a dangerous radical—he ran once, unsuccessfully, as a liberal Republican in the Senate primary—he is at heart a man of deeply conservative convictions. His view of the museum as an institution is unabashedly old-fashioned: it is a place which offers the best fruits of the human spirit to interested citizens for their delight and their instruction. "A nonsectarian church," he calls it, "dedicated to the creativity of Man, with no prescribed rites, to be visited at pleasure."

He would of course like to see crowds come there

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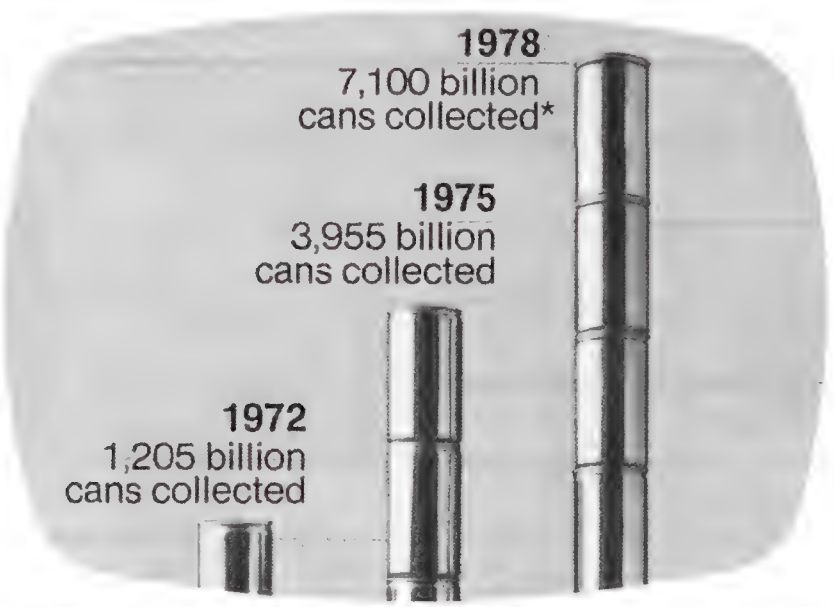


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and he is pleased that they are coming. Attendance is at a rate of 250,000 a year and steadily rising. But he wants them to come because they want to see great art. He has only contempt for the Barnum and Bailey school of museum management, which seeks to turn the staid old institution into some kind of frisky community center. The first thing he did on taking over Pasadena was to suppress the children's fingerpainting

The Norton Simon Foundation

Giovanni di Paolo's *Branchini Madonna,* painted in the 15th century for Branchini family chapel, Siena.

A work of weird, compelling power, Allessandro Magnasco's *Interior with Monks* was painted c. 1710.

sessions, the tea room, the strolling fiddlers, all the devices which the old management had dreamed up to popularize the place. If he feels that something should be done for the area's huge Hispanic population, he does not offer mariachi bands but a roomful of early-state Goya prints. His attitude is much like the one recommended to Sir Hugh Lane by William Butler Yeats in 1912. Lane, a rich man, was reluctant to give his collection of paintings to the city of Dublin because the Dubliners would not build a gallery for them. Forget them, said the poet:

> Look up in the sun's eye and give
> What the exultant heart calls good
> That some new day may breed the best
> Because you gave, not what they would,
> But the right twigs for an eagle's nest!

The Norton Simon Foundation

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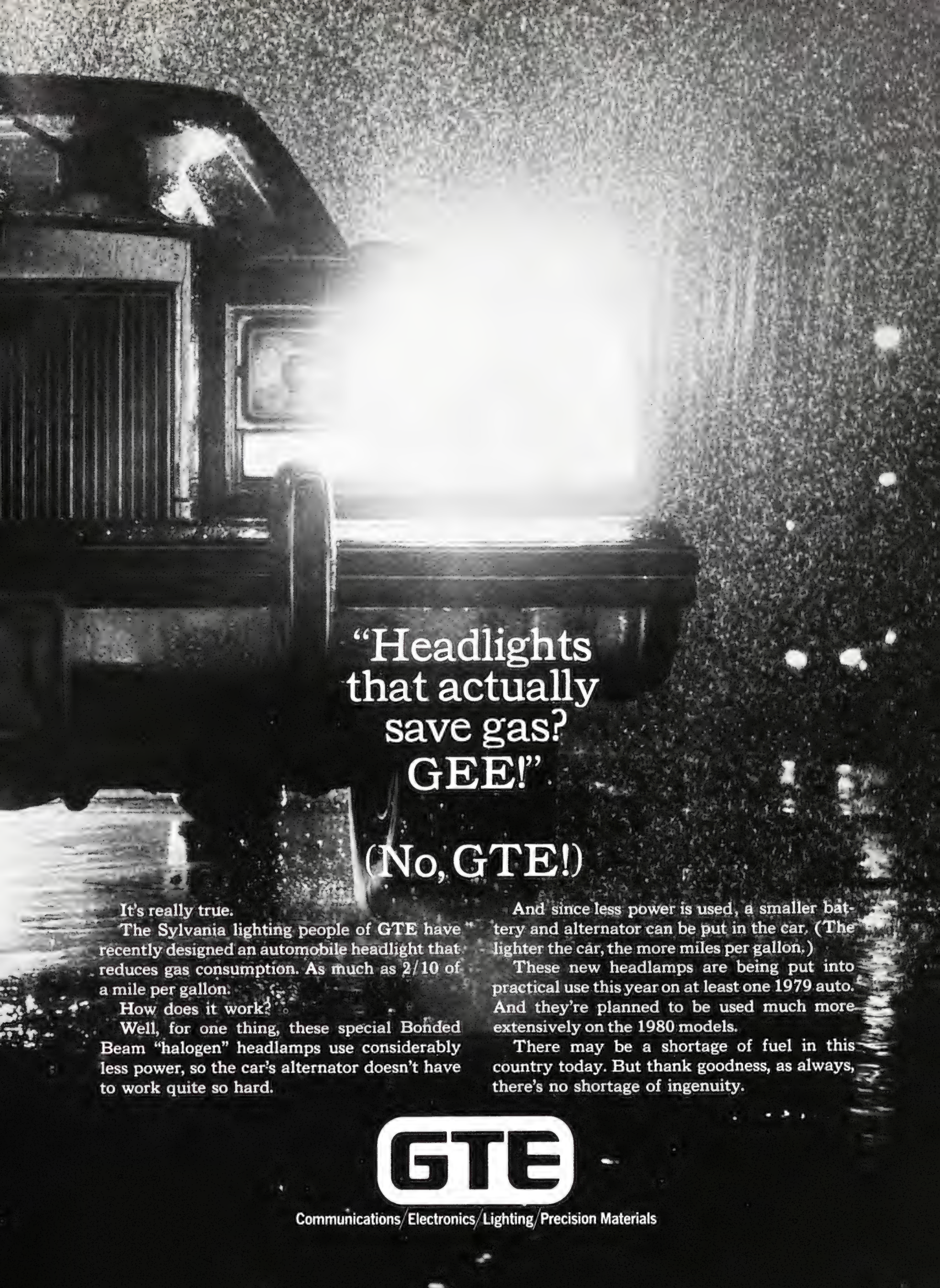

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These new headlamps are being put into practical use this year on at least one 1979 auto. And they're planned to be used much more extensively on the 1980 models.

There may be a shortage of fuel in this country today. But thank goodness, as always, there's no shortage of ingenuity.

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*By Robert and Patricia Cahn*

# Treasure of parks for a little country that really tries

*Led by two energetic young conservationists, Costa Ricans are making an oversize effort to preserve their lands and very special wildlife*

We had been flying over more than 30 miles of Costa Rican countryside without spotting a house, a road or any sign of civilization—most unexpected in this tiny country of two million people—when the pilot pointed ahead to a small, narrow clearing at the edge of the sea and indicated he was going to land our aged single-engine plane there. We had left the urban sprawl of San José, the nation's capital, an hour earlier. Now, in the midst of a vast tract of lush tropical rain forest, we had reached our destination, Corcovado National Park. It is one of 20 parks and biological reserves set aside during the past decade for what in some ways is the most remarkable national-park system in the world.

The place we were visiting was very much unlike a park in the United States, where wilderness is reached after running a gauntlet of hotels, gas stations and restaurants. Corcovado, bordering the Pacific Ocean in southwest Costa Rica, has nary a road or motorized vehicle of any kind within its 89,000 acres. Indeed, a visitor cannot find many creature comforts in Costa Rican national parks. If a bed is available at all, in most parks it is a springless slat-board bunk used by rangers and scientists. At Corcovado you bring your own mosquito netting or suffer the consequences, and share in the beans and rice tastily prepared over a

A waterfall plunges down out of the rain forest in Corcovado National Park in southwestern Costa Rica.

A rare bird with iridescent plumage, the Quetzal dwells in cloud forest of Monteverde preserve.

woodburning stove for the staff. And at this park at least, you get around on foot.

But comforts—or the lack of them—are not exactly the point. What matters is that this Central American republic, slightly smaller than the state of West Virginia, has made an extraordinary commitment of its land and national budget to the preservation of its wild lands. This is all the more remarkable at a time when the destruction of rain forests in tropical countries around the world has become a matter of grave international concern. Although forest land has been and is being destroyed in Costa Rica too, since 1969 the country has placed 3.5 percent of its land in national parks and preserves, a larger percentage than has been set aside by the United States. Costa Rica is the little country that tried.

We had come here primarily for a meeting of the National Parks Commission of the International Union for the Conservation of Nature and Natural Resources (IUCN). But we also wanted to see the country that had produced, in fewer than a dozen years, a park system of world renown. In a part of the world notable for political unrest, Costa Rica is an island of participatory democracy and stability—all the more amazing considering its location between Nicaragua and Panama. It channels a third of the federal budget into education, has the highest literacy rate in Latin America, and has developed an excellent system of rural health care. The citizens are amiable and—increasingly rare these days—friendly toward Americans.

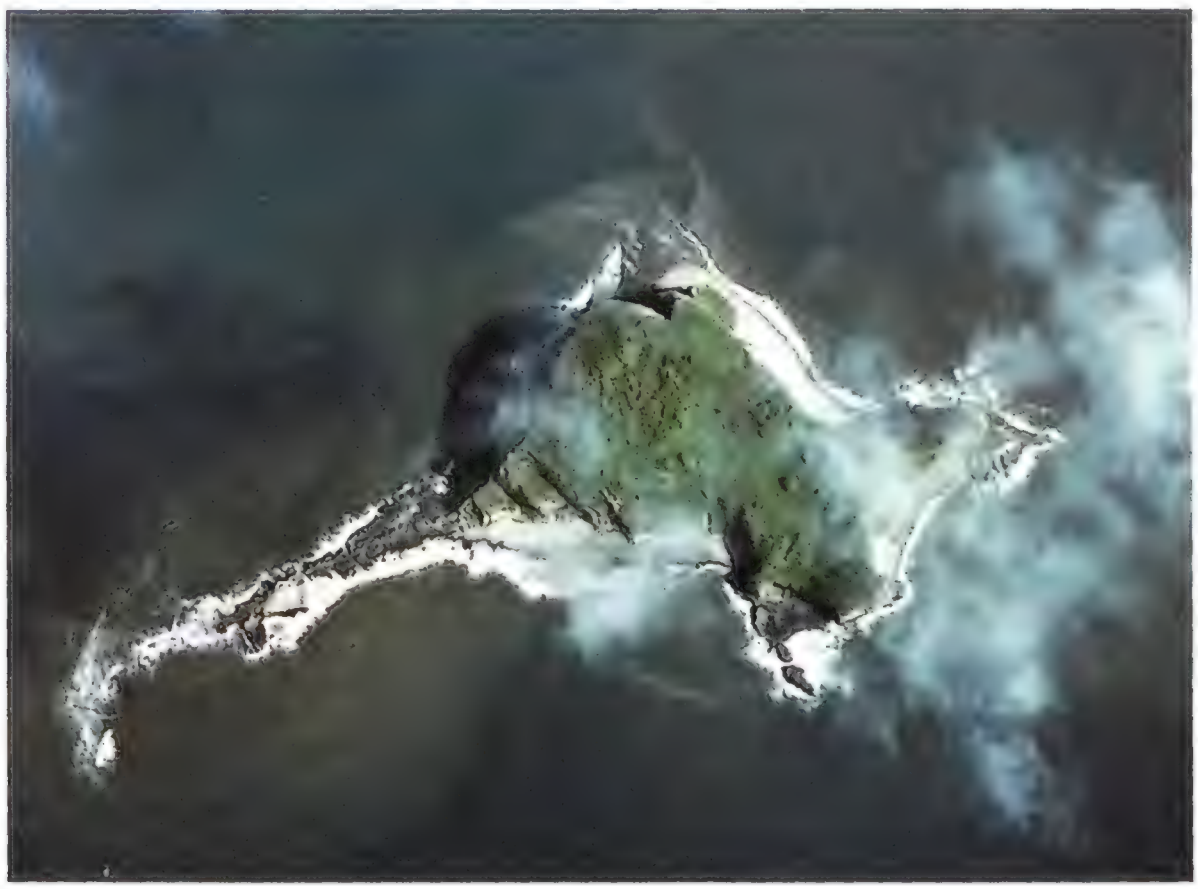
The high point of our seven-park pilgrimage came at Corcovado when we stepped out of the plane into the deep, cool shade of the tropical forest. Huge trees, some more than 200 feet high and six feet in diameter, towered over a rich tangle of smaller trees and vegetation. Here and there we heard a sound like the patter of rain and discovered it was thousands of tiny pink and yellow blossoms floating down from tall trees. Hummingbirds hovered above the fallen blossoms, whose fragrance mingled with the earthy odor of the damp, decomposing leaves underfoot. Now and then there was loud chattering as parrots flashed by.

It is hard to imagine any place more suited to give pleasure to an amateur naturalist. In two days at Corcovado, though we were not experienced birders, we were able to identify 37 species. On one late-afternoon walk of about three miles, we saw huge Scarlet Macaws (p. 73), Scarlet-Rumped Tanagers, oropendolas, a Laughing Falcon and a Chestnut-Mandibled Toucan—a vivid, yellow, black, red and white bird with a preposterous bananalike beak.

We didn't encounter any of the dangerous snakes that inhabit the forest and grasslands. Nor did we see

*In 1969 Robert Cahn won a Pulitzer prize for his reports on U.S. national parks. He and his wife, Patricia, now write about environmental matters.*

Mario Boza, 37, launched Costa Rica's park system a decade ago.



Guyabo Island on Pacific coast, haven for seabirds and turtles, is protected as a biological preserve.

any of the six species of rare cats that can be found there (Corcovado is one of the last places in Central America where one might see an ocelot [p. 72] or a jaguar). But we did see the wild pigs called peccaries, and the long-tailed relatives of the raccoon called coatimundis. And we came across a troop of spider monkeys (p. 70), comical acrobats that shrieked at us, shook limbs, and threw leaves and twigs to scare us away from their territory.

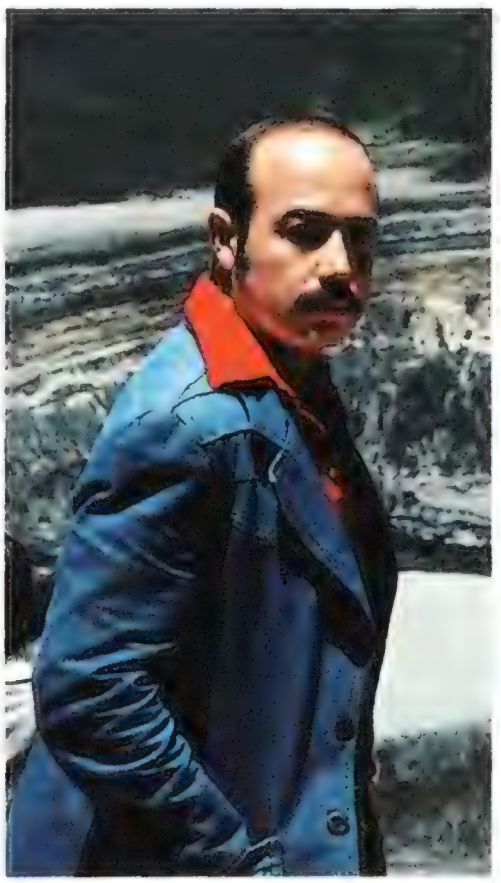
During one of our walks on Corcovado's jungle trails, we were puzzled to see plastic streamers staked near big, red passionflowers. We got our answer when we came across Dr. Frank B. Gill, as he stooped beside the blossoms. An ornithologist and behavioral ecologist at the University of Pennsylvania, Gill explained that he had observed Long-tailed Hermits (hummingbirds) sipping passionflower nectar at that spot. We watched him while, syringe in hand, he measured the amount of nectar each blossom produces. "It's a way of calculating the birds' feeding habits and how many flowers they require in order to meet the day's energy needs," Gill said. "It's all a part of understanding what the birds are doing and why."

Our experiences in Corcovado revealed the key differences between Costa Rican parks and those in the United States or, say, Kenya: the emphasis on scientific research and the low priority given to tourism. Although some of the more accessible parks attract numbers of tourists, all of them are intended primarily as preserves for tropical ecosystems. Of Corcovado's 200 or so annual visitors, more than 90 percent are scientists, frequently from the United States.

The presence of all this science is no accident, for Costa Rica is a kind of mecca for tropical research. It has sweltering lowland rain forests along both Caribbean and southern Pacific coasts; dry, thorny forests along the northern Pacific Coast; and cool, lush cloud forests in the central mountains. As part of a narrow land bridge joining two continents, it has an exceptional variety of fauna and flora. At Corcovado, American scientist Gary Hartshorn once identified 111 different species of trees on a two-acre plot. Costa Rica has close to 800 species of birds, over 100 more than can be found in all of North America above Mexico.

As might be expected, scientists and conservationists from abroad had a good deal to do with the development of the park system. But the people who had the most to do with it were two young Costa Ricans, Mario Boza and Alvaro Ugalde (opposite and below). When Boza first visited the United States in 1967, Costa Rica was a country without large amounts of public land, without a strong citizen conservation movement, and without any political backing for conservation. A thin, bespectacled forestry student of 25, he went on a group tour of U.S. national parks and national forests. The leader of the trip was Dr. Kenton Miller, a research scientist in wild-land management who had been teaching in Costa Rica.

Main crater of Poás Volcano, a popular park, contains a steaming lake. Volcano was last active in 1978.



Alvaro Ugalde, 33, is director of the National Parks Service.

Saturniid moth (shown double its size) is one of many colorful insects harbored in Costa Rica's forests.

On our own trip to Costa Rica we spent some time with both Boza and his former teacher, Miller, who had returned to chair the IUCN parks conference, and talked with them during a visit to one of the new parks, Santa Rosa, on the country's Pacific coast. As we hiked up a cliffside trail, Miller reminisced about how it all began. "On a free day just outside Great Smoky Mountains National Park, I asked if anyone wanted to go back into the park for a day. Boza did, and that evening he turned to me and said, 'Is there a possibility that I could change my thesis and study how to develop a real national park for my country? And would you be my faculty adviser?' " Miller agreed. Boza completed his thesis on a park-management plan for one of Costa Rica's volcanoes, and then went to work for the Ministry of Agriculture.

Boza's first opportunity to create a park was to come here at Santa Rosa. It was an appropriate beginning. From the tops of the cliffs we looked down on a rugged coastline with its giant rock formations. To the north were beaches that are now protected as a haven for the threatened Pacific Ridley and other marine turtles that come ashore here each year to lay their eggs. Bordering the coast were mangrove and transition forests leading upward to a vast lowland dry forest. In this variety of habitats live 200 species of birds and 60 species of mammals.

During breaks in our walk, Boza told me something of the park's background. Santa Rosa was famous in Costa Rica as the site of a brief battle in 1856, in which an improvised army of Costa Rican peasants had defeated a well-equipped invading foreign mercenary force led by William Walker, the notorious North American adventurer. Eventually the historic battle site and some 23,000 acres of land were acquired by the government's Tourism Institute.

"And that's how things stood in 1969, when a na-

Spectacular golden toad (here about triple life size) occurs only in Monteverde, was found in 1960s.

tional parks department was set up in the Ministry of Agriculture under the Forest Service," Boza said. "The new department was given responsibility for all of Costa Rica's volcanoes, a nature reserve and the Santa Rosa National Monument. The only problem was that it had no budget and only one employee—me."

But Boza was not discouraged. He recruited his friend, Alvaro Ugalde, who had just returned from the United States where he had been trained in national parks management, as had Boza the previous year. There was no money to pay him, but Ugalde agreed to go to Santa Rosa as superintendent on a volunteer basis until Boza could scrape up funds for a salary.

Turning Santa Rosa into a real park was not easy. Ugalde found some of the "park" occupied by the cattle of nearby ranchers, and by squatters who were burning stubble to clear their fields. Government forestry officials were closing their eyes to the damage. To stir things up, Boza wrote to the Ministry of Agriculture and sent a copy to the newspapers, which subsequently carried headlines, he remembered: " 'Santa Rosa in flames; national park being ruined.' " The publicity had its effect; Ugalde was able to start moving the squatters and ranchers out.

Then came another crisis. Daniel Oduber, the president of the Legislative Assembly, sponsored a bill to take Santa Rosa away from the parks department and return it to the Tourism Institute—a move which would probably open the area to grazing again. Said Ugalde to Boza: "Mario, we are only six months old, and already we are an endangered species."

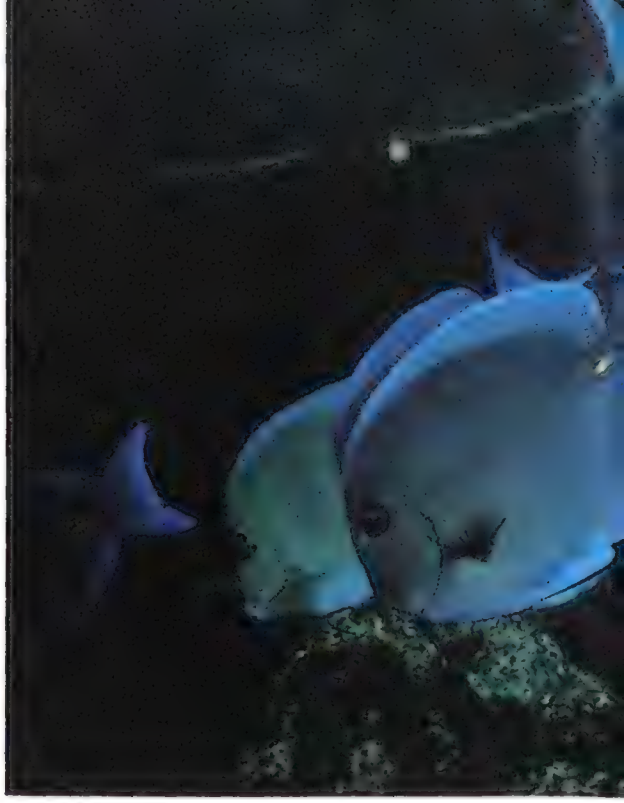
*A job for the fairy godmother*

But the two young men did not give up. They found an obscure clause in Oduber's bill proposing a tax on liquor, visited businessmen who would be affected by it and pointed out what it would cost them. They got the Biologist's Association to write letters and pressure the legislature. "And then," Boza told us with a smile, "we called on our fairy godmother."

The fairy godmother was American-born Karen de Figueres, the wife of the President, José Figueres. Earlier, she had told the two young advocates that she would help them, and now they went to see her. "She was wonderful," Boza said. "Doña Karen talked with or wrote letters to every one of the members of the legislature, asking them to oppose Oduber's bill."

She also wrote a letter to Oduber himself, urging him to withdraw the bill. Showing considerable political artistry, she asked her husband—without telling him the contents of the letter—if he would deliver it himself to Oduber. And he did. Oduber persisted, but when the bill came before the legislative committee, it failed to get a single favorable vote.

Troops of agile, acrobatic spider monkeys dwell in Tortuguero National Park on Caribbean coast.



Blue tang or surgeonfish are common on coral reef at Cahuita;

Boza and Ugalde had won that round by astute maneuvering. With the First Lady's help, they also got two new national parks decreed by the President: Tortuguero and Cahuita, both on the Caribbean coast. And the Legislative Assembly created a 9,800-acre park at Poás Volcano.

Then, in 1974, when Figueres' term came to an end, the new President of Costa Rica was none other than their old adversary, Daniel Oduber.

Ugalde told us the rest of the story as he drove us back from Santa Rosa to visit another park, Cahuita. Ugalde at 33 is a charming, urbane bachelor who appears to be in perpetual motion. His lightly accented, fluent English is peppered with American slang, attesting to his days as a graduate student at the University of Michigan.

"Mario and I feared the worst when Oduber took office," Ugalde said. "We were scared he would remember how we beat him on his Santa Rosa bill." To make matters worse, Boza had run into trouble with his own boss, the Minister of Agriculture, who was unhappy at the way his young subordinate was trying to achieve more independence for his parks department. Boza, learning that he was to be transferred, resigned to develop a school of environmental sciences at the National University. But he did maneuver to get Ugalde appointed his successor as director of national parks. "It helped," Ugalde admitted, "that I was a member of Oduber's political party." (Some people surmise that the two friends maintain affiliations with opposing parties so that no matter which side wins an election, the parks will have an advocate with connections.)

Same party or not, for the first few months Ugalde tried to stay out of Oduber's sight: "But one day I ran plunk into the President coming out of a building.

" 'Ah, Ugalde! Where are you now?' the President asked. 'In the parks department,' I replied. 'Come see me,' he said. My heart sank.

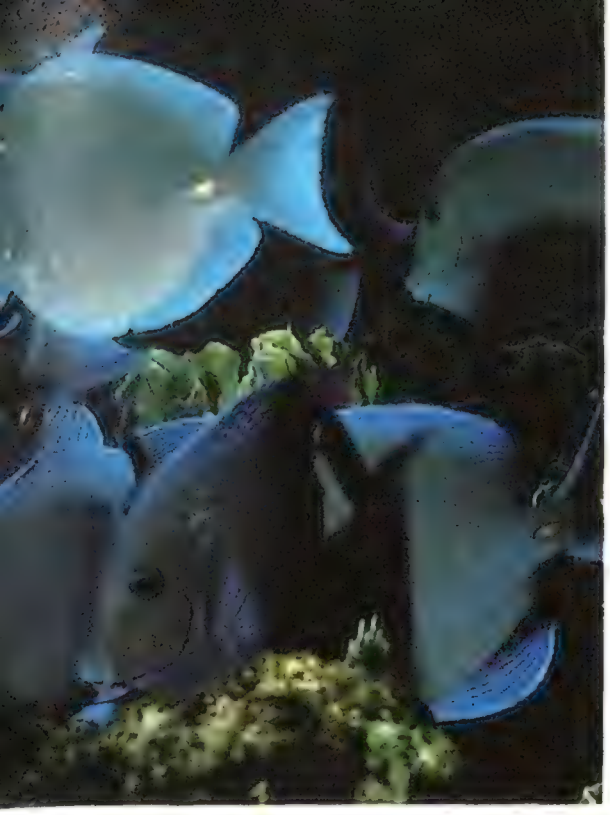
"But I was surprised. Instead of Oduber being revengeful, he became the greatest friend the national parks ever had."

Some good years followed. Three decades earlier, Costa Rica had abolished its armed forces in favor of using the money and manpower for social programs. Now, with strong presidential backing, the country started turning swords into parks. "Through legislation and presidential decrees, 400,000 acres were protected," Ugalde told us. "We tripled our personnel and got the parks department made into a full-fledged National Parks Service. And we were given a comparatively large budget."

The most important new park was Corcovado. Ugalde estimated it would cost 1.5 million colones ($176,000 today) for relocating about 45 families of squatters and starting the park. He and Joseph Tosi jr., of San José's nonprofit Tropical Science Center—a private organization which had already established a cloud-forest preserve called Monteverde—obtained promises of financial assistance from three U.S. conservation groups. But after deeper study of the remote area, Ugalde was dismayed to learn that there were many more squatters than anyone had realized, and that the cost of relocating them would be ten million colones ($1.2 million)—a huge sum in Costa Rica.

"I was sure I'd be fired the day I had to tell the news to the President," Ugalde recalled. "But he took it calmly, telling me: 'It may cost ten million colones now, but how much would it cost 50 years from now? We will do it.' "

Thus Corcovado National Park got under way.



spines near the base of their tails can inflict a painful prick.

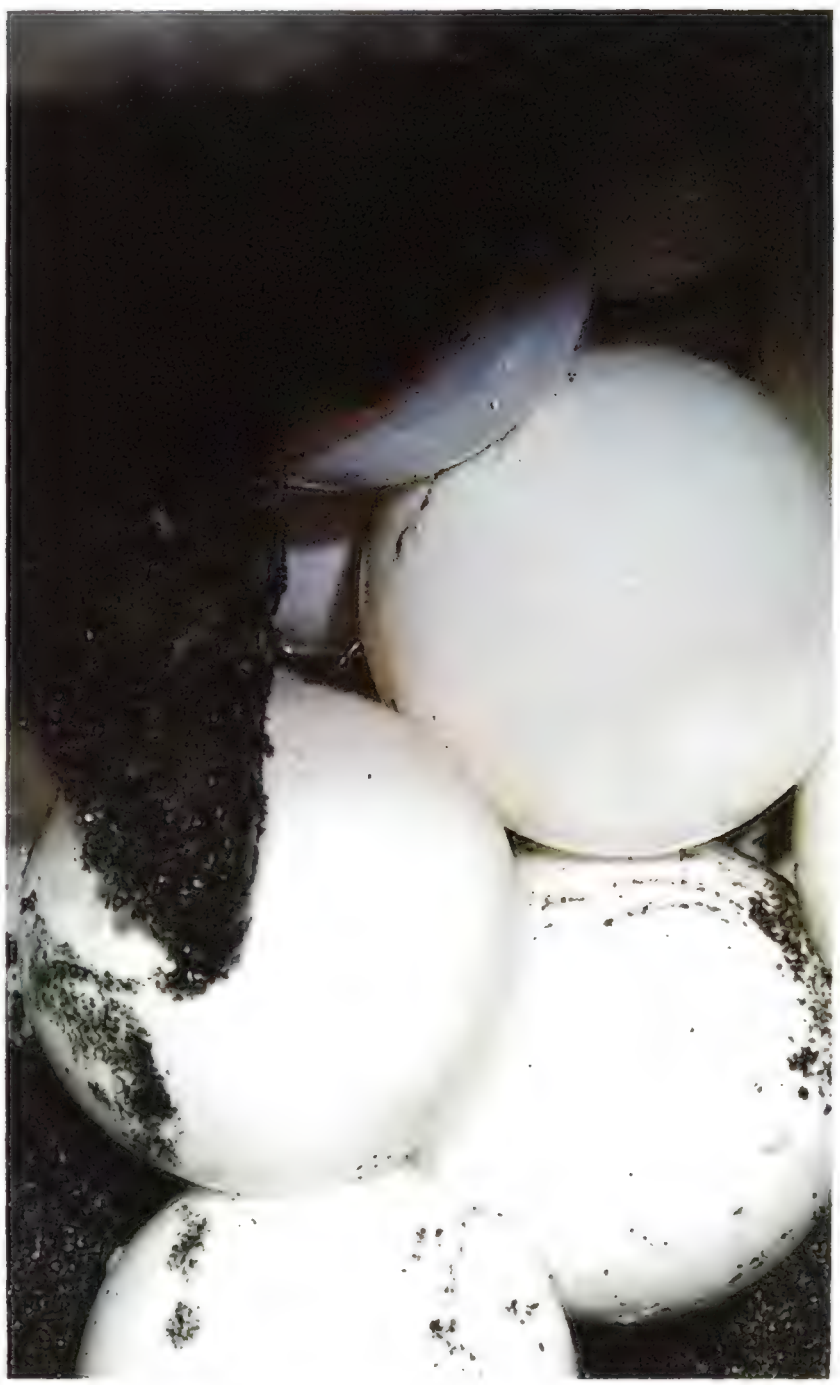
Three-toed sloths, which Costa Ricans call "lazies," live—usually upside down—in several of the new parks.

There were different problems with Cahuita National Park. In Spanish, Costa Rica means "rich coast," and at Cahuita it is easy to understand why early explorers chose the name. It is the sort of place one associates with Caribbean islands—swaying coconut palms, white sand beaches and turquoise water—but there is one difference: it is not acrawl with tourists.

At Cahuita in 1975, Ugalde had encountered stiff opposition from hostile fishermen and farmers who felt that a park would intrude on their livelihoods. "When a public hearing was held," Ugalde said to us, "it seemed like I was the only defender. But after I explained to Cahuitans that the real threat came from the land developers and wealthy people from San José who wanted beach-front vacation homes or land for speculation, the local people realized that the park would give the best protection to their way of life." After Ugalde's forceful presentation, a vote was taken. The park won almost unanimously.

At Cahuita we donned masks, snorkels and fins for a foray to the coral reef just offshore. Plunging into the tranquil sea, we were soon among gardens of staghorn and brain coral. Brightly colored blue tang (above), parrot fish and dozens of others darted about, sometimes very close to our masks. When we finished our swim, we took a walk in the small rain forest just behind the beach. We have toured many of the parks in the United States, and have had the thrill of encountering everything from bears to bison. Here the excitement came from spotting a huge iguana climbing out on a mangrove limb, or sighting that curious animal, the three-toed sloth (above), moving with deliberate slowness, if at all.

When Oduber's term ended in 1978, some Costa Rican park boosters wondered whether the good days



A green turtle lays her eggs at night at Tortuguero, one of last Caribbean refuges for these big reptiles.

The ocelot, an endangered species somewhat larger than the domestic cat, still survives at Corcovado.

were over. But the new President, Rodrigo Carazo, a member of a different party, had a surprise for them. Not only did he retain Ugalde as parks director, but he brought Boza back to influence as Adviser to the President for Natural Resources.

Now, with the country under economic stress because of oil shortages and depressed prices for its key agricultural exports, Carazo has severely cut the parks' funds and personnel as part of a government-wide budget-tightening process, but he has nevertheless approved the purchase of private land holdings within the parks and for extensive park expansion.

Before leaving Costa Rica, all of the delegates to the IUCN parks conference went with Boza and Ugalde for a picnic lunch at Poás Volcano. Poás last was active in 1978, but is very much alive. From a trail around the rim we peered into the deep cavity at a hot, gray lake emitting clouds of steam (p. 67). Another crater nearby, long inactive and lined with lush vegetation, held a sparkling blue lake.

We were not alone. It was a holiday Sunday, and the park lies only an hour from San José. People started arriving in midmorning, and before the day was over there had been at least 4,000 visitors. Although that number is far more than the park can really handle because trails and picnic areas are still lacking, the crowding didn't seem to bother the visitors, who hiked about, picnicked among the trees and listened to pop music or soccer-game broadcasts blaring from what seemed to be 4,000 portable radios.

Some IUCN delegates, experts on national-park matters, had sounded a note of caution about the future of Costa Rica's young parks program. They noted that the parks service is dangerously short of trained professionals, and that protection is inadequate in most areas, with the result that poaching and other intrusions cannot be completely controlled.

Yet we found it hard to be pessimistic about the future. After our IUCN picnic at Poás, we noticed two men walking around picking up soft-drink bottles and collecting leftovers and used paper plates. They happened to be the Adviser to the President and the Director of the National Parks Service, Mario Boza and Alvaro Ugalde.

So much for the trappings of rank in the Costa Rican park system. And perhaps a symbol for the IUCN delegates of how a small country can build itself a sound conservation program. What it takes, it seems, is a couple of people with the right ideas, a lot of devotion, political savvy and a little true grit.

The yard-long Scarlet Macaw, shown perching at nest hole in tree limb, is found in parks near Pacific.

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# PORSCHE+AUDI
## Nothing Even Comes Close

*By Israel Shenker*

# J. Pierpont Morgan and the princely library he founded

*The great financier lived a lordly life, made and spent fortunes, is best memorialized today by his rare collection of art and books*

On a summer's day in 1906, when King Edward VII of England called on J. Pierpont Morgan of the United States at his London mansion, the two men—one rich in traditions of royalty and the dignity of empire, the other distinguished for the trappings of wealth and the burdens of power—sat companionably smoking cigars and exercising the tolerance that men conscious of their importance occasionally extend to inferiors. The King was pleased to recognize some of the portraits hanging in the Morgan residence as having belonged to his friends. But His Majesty did not approve of the position chosen for the portrait of the Countess of Derby. "The ceiling is too low in this room for that picture," he said. "Why do you hang it there?"

Mr. Morgan was silent. He stared at the portrait. Finally he spoke. "Because I like it there, sir," he said.

Who but a Morgan would impute lèse-majesté to a king? Who but a Morgan would sail the oceans on his 302-foot steam yacht and have another yacht just to travel up and down the Nile? Was it not Mr. Morgan who in 1895 saved America from bankruptcy, who stemmed the financial panic of 1907, who ran the railroads and built United States Steel? The writer Finley Peter Dunne limned his portrait in the words of his character, Mr. Dooley: "Pierpont Morgan calls in wan iv his office boys, th' prisidint iv a national bank, an' says he, 'James,' he says, 'take some change out iv th' damper an' r-run out an' buy Europe f'r me,' he says." In London, peddlers hawked a penny "License to stay on the earth," signed "J. Pierpont Morgan."

Today the grandest relic of the planetary glory that was Morgan is not the bank that bears his name but the library that testifies to his acquisitive passion and taste. It stands in New York where he built it, and where his son J. P. Morgan expanded it, at the corner of 36th and Madison. In the hushed atmosphere that settles almost palpably as one enters these decorous precincts, the treasures of past civilizations are perfectly at home. As much museum as repository of books and manuscripts, the library houses a spectacular record of the ages, from ancient Assyrian and Babylonian seals and cuneiform tablets (including the earliest dated Mesopotamian tablet, c. 1714 B.C., with a flood myth antedating the account in Genesis) to Egyptian, Greek and Coptic papyruses to medieval and Renaissance illuminated manuscripts to jewel-encrusted bindings to early printed books to the greatest collection of Rembrandt etchings in America to letters penned in the shadow of the present day. "The Morgan is like the British Royal Family's Windsor or the Duke of Devonshire's Chatsworth, a princely or ducal library of immense diversity," says Charles Ryskamp, director of the library since 1969.

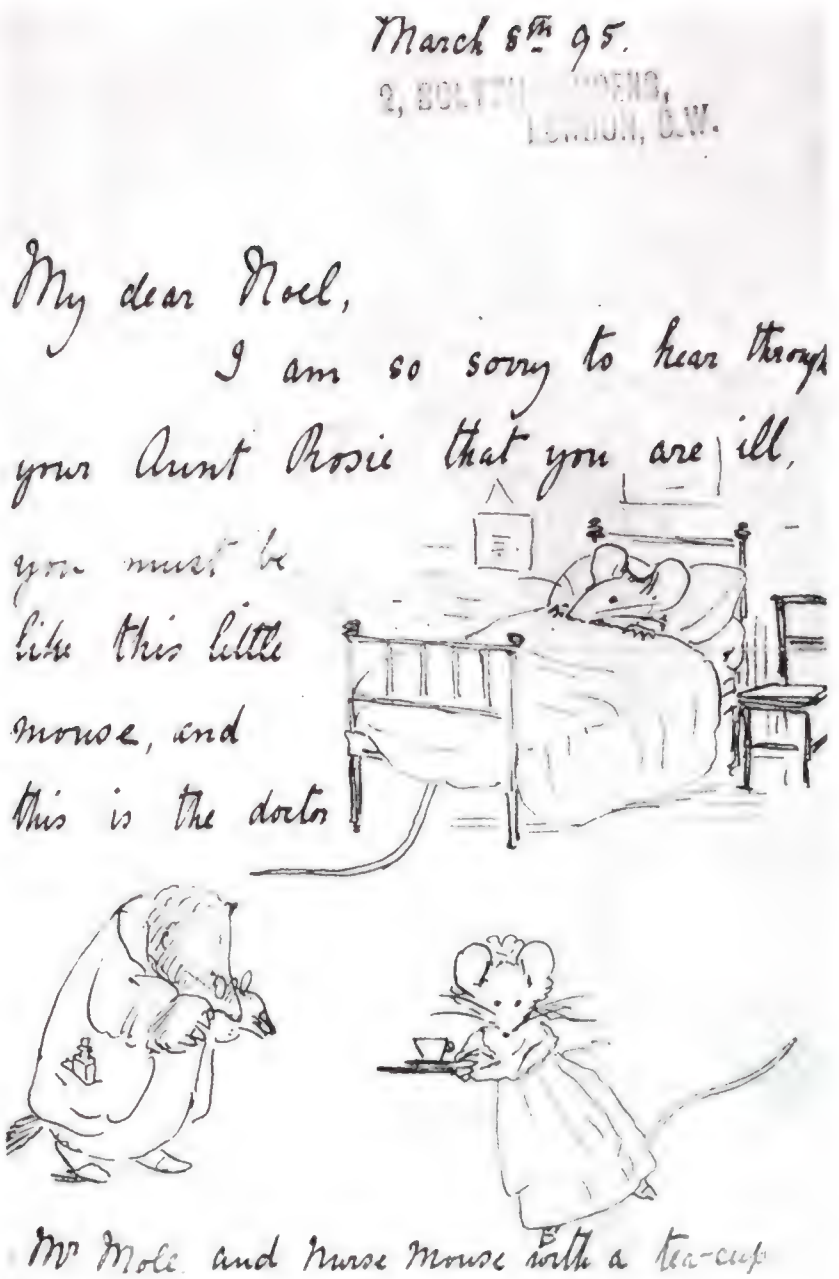
Every year about a hundred thousand visitors attend the library's exhibitions. A discreet notice suggests that support would be welcome. The average contribution is less than five cents.

Chicken feed is in the family tradition. Morgans and Pierponts established themselves as farmers when they came to America early in the 17th century, turning later to trade and theology. J. Pierpont Morgan, born in 1837 to wealth and ease, followed his father's example by choosing the perils of finance and the pleasures of collecting.

After his father's death in 1890, Pierpont Morgan began buying in earnest, ransacking the past with such assiduity that he became the world's prime target for the cupidity of dealers and confidence men. It was said that Mr. Morgan purchased without viewing the object, looking instead into the dealer's eyes. He used to say that the most expensive words in any language were *unique au monde,* but he spent with the bravado of a man who suspected himself of infallibility and had the money to test his suspicions. For the 1459 Mainz

East Room of the Morgan Library is a vast treasure-filled opulent chamber displaying the inner grandeur of the marble-sheathed Renaissance edifice.

*Veteran journalist and author Israel Shenker wrote over the years for* Time *and the* New York Times, *now writes from his home in Renfrewshire, Scotland.*




Mr Mole and Nurse Mouse with a tea-cup
The collection contains thousands of authors' 18th- and 19th-century manuscripts and letters, this one illustrated in her fashion by Beatrix Potter.

Psalter he paid what was said to be the highest price ever given to that time for a printed book, a little more than £5,000, even in 1900 a real bargain. He bought the ninth-century Lindau Gospels, bound with jewels (p. 83); he acquired great folios and precious first editions and the habit of buying in wholesale lots.

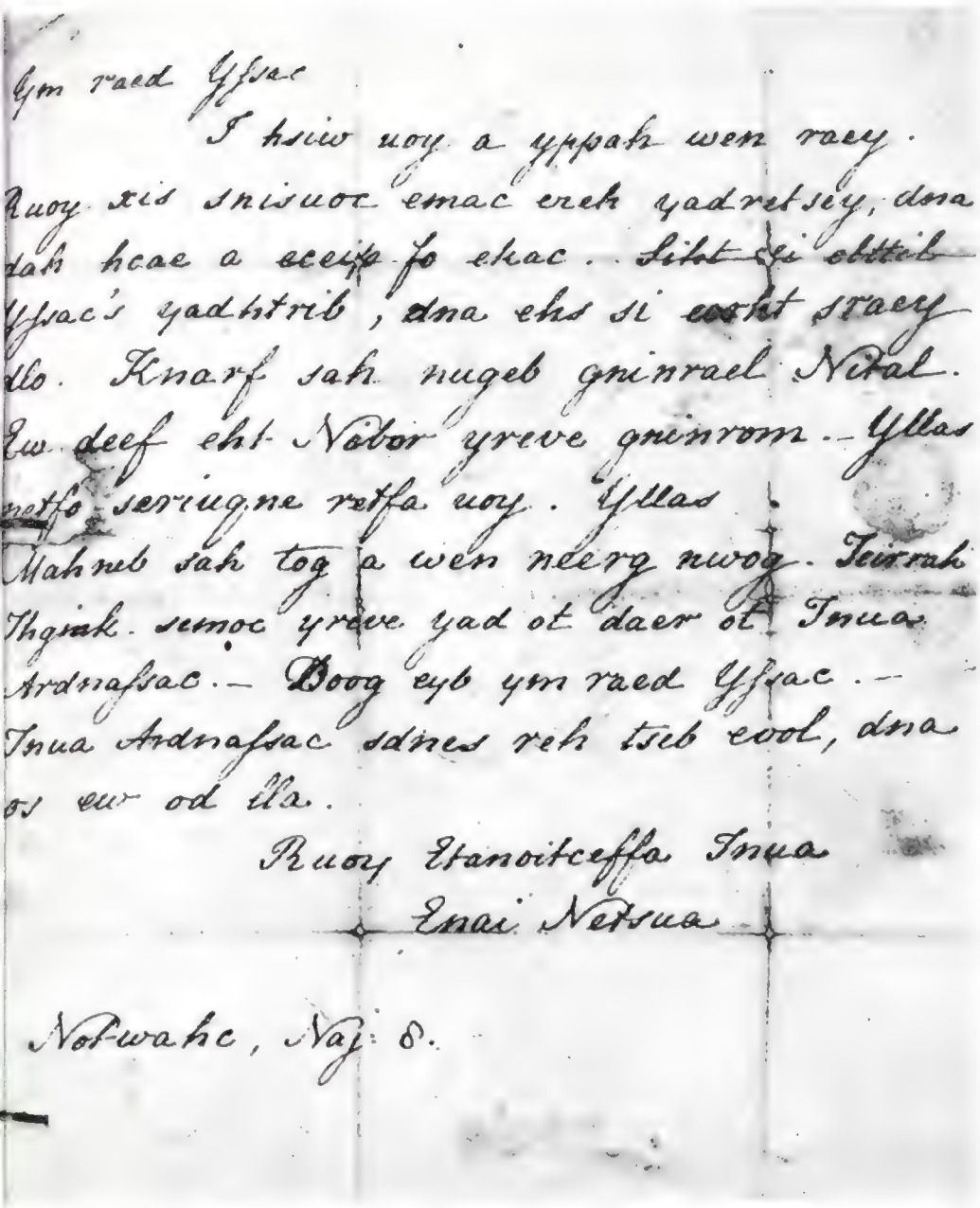
European art dealers visiting New York are said to have attended a gambler's classes on the card games Mr. Morgan played. One dealer told of reading that the supreme collector had just bought a painting by Domenico Ghirlandaio. The dealer quickly boarded the *Mauretania* for Cherbourg, took the first sleeper to Florence, and for three weeks, day after day, waited in the refectory of the Ognissanti church before Ghirlandaio's fresco of the Last Supper, reasoning that a man who paid a Morgan's ransom for a Ghirlandaio would want to see the artist's greatest work. Finally Mr. Morgan entered the room. The dealer engaged him in casual conversation, which led to dinner and a sale.

Intent on acquiring Byron's manuscripts, he dispatched a representative to Greece with a letter of credit, and instructed him to live there until he arranged the purchase. Year after year the volumes arrived, until Mr. Morgan had them all.

When Britain threatened his collection with death duties, he decided to transfer his treasures to New York. The U.S. government obliged by authorizing free import of art objects more than a hundred years old, and Mr. Morgan paid a Treasury official and a customs inspector to go to London and examine the collection, along with proofs of age and authenticity.

Having bought property on 36th Street next to his home, Mr. Morgan in 1900 commissioned Charles F. McKim (SMITHSONIAN, March 1978), the prominent architect, to build a library. McKim decided on a Renaissance palazzo of fitted marble blocks, with an interior reminiscent of great Roman villas. Mr. Morgan said that he did not want to interfere—he merely wanted to approve all the details. It wasn't his library, he would say wryly, but McKim's, and eventually he decided that he did not want McKim's name on the facade. The story goes that McKim arranged to have himself memorialized there nonetheless, as the face on the sphinx carved to the right of the entrance. William M. Voelkle, the Morgan Library's associate curator of medieval and Renaissance manuscripts, has studied the evidence. "I have compared the face of the sphinx with Augustus Saint-Gaudens' relief of McKim and with contemporary portraits," he said, "and the resemblance is not striking."

When Pierpont Morgan died in 1913, his collections were worth about $60 million according to the *Times* of London. Eventually, numerous objects went to the Metropolitan Museum, to be merged into the museum's collection; some art went to Hartford, Mr. Morgan's native city; most of the rest stayed at the



Ym raed Yssac

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In mirror-script Happy New Year letter to her niece, aptly named Cassandra, Jane Austen used an i for j when spelling Jane backwards. It came out as Enai.

The Gilbert of Gilbert and Sullivan was also noted for his very popular *Bab Ballads*. Here he drew himself as Bab, the ultimate Victorian misanthrope.

library. Excluding the collections, the value of the estate was about $68 million—much less than the value of the estates of Henry C. Frick and Andrew Carnegie and John D. Rockefeller. Rockefeller is supposed to have said: "And to think he wasn't even a rich man."

After Mr. Morgan's death, the director of his library stayed on. Belle da Costa Greene was a young cataloguer at Princeton University's library when Mr. Morgan hired her to take charge of *his* library. A dynamic, forceful and flamboyant woman, she held sway for 43 years, treating staff and visitors to the peremptory inclinations of her strong will and to what one biographer described as her "whiskey tenor." When Felice Stampfle, the Morgan's curator of drawings and prints, was asked to explain what she meant in describing Miss Greene as "hypnotic," she replied: "She had a powerful personality."

"She was a great friend of Bernard Berenson's," Miss Stampfle said. Miss Greene's half of their correspondence is at Berenson's Italian villa, I Tatti (SMITHSONIAN, January 1979). She destroyed *his* letters.

Edwin Wolf, in his biography of Dr. A. S. W. Rosenbach, the illustrious bookseller, writes of Miss Greene's acumen in knowing "when a great book was something she ought to go after and what was sometimes disconcerting . . . when a great book was not so great that a better would not come along if she waited."

Frederick B. Adams jr. was summoned from the sidelines to replace her after she retired in 1948, and served for 20 years. His great innovation was the creation of the dignity of Fellow of the Pierpont Morgan Library, a distinction offered only by invitation. It is thanks to the Fellows that the Morgan is still a force at auctions, and that the collection keeps growing. The 18th report to the Fellows, detailing acquisitions for 1975-1977, is a book of 405 pages plus reproductions.

Where to house these gifts would have been a problem were it not for the foresightedness of J. P. Morgan,

who razed his father's house and built an annex, more than doubling the size of the library.

Though Miss Greene had never attended college, it was widely thought that anyone who did not have at least a PhD was barred from the reference library. Shortly before World War II, the New York *Daily News* sent a reporter to investigate. She reported that Mr. Morgan's library was about as public as his bathroom. The library mended its ways, and since then the books and manuscripts have been accessible to those merely working toward a doctorate, as well as to authors, men and women of letters, bookdealers and others who can demonstrate seriousness of purpose.

The great rooms and exhibitions are now open to all. In the East Room, on permanent display within a glass case, is one of the Morgan's two and a half Gutenberg Bibles. Periodically a member of the staff opens the case and turns a page, so that the Bible may age evenly, each leaf subject to the same trial by exposure. Here, too, is the 1785 life mask of George Washington by Jean Antoine Houdon; a dentist visiting the Morgan—the story goes—diagnosed a broken jaw. There is also a portrait of Milton, aged ten; the Morgan has the only known manuscript of any part of *Paradise Lost,* presumably written down by a daughter of the blind poet. There is also a 35-page summary, in Einstein's hand, of his Theory of Relativity.

A great 16th-century Flemish tapestry dominates all. *The Triumph of Avarice* features King Midas and a moral: "As Tantalus is ever thirsty in the midst of water, so is the miser always desirous of riches."

Ponderous bronze bookcases line the walls, with shelves of heavy glass rather than wood, since wood might leave splinters in precious volumes. In one corner, a double set of bronze bookcases can—with great effort—be swung open to reveal a stairway leading to upper tiers of bookcases. Within is a tiny alcove.

Portrait of Morgan over front fireplace in West Room, Morgan's study, is by Frank Holl; to the right is

A visitor recently expressed astonishment that the treads of the concealed stairway were of wood, not marble. "On *this* side," rejoined Francis S. Mason jr., assistant director of the Library. "On the other side of the room they *are* marble."

In the East Room the Morgan displays Edward Steichen's photograph of Pierpont Morgan, forbidding and glowering as in life (p. 76). Steichen said meeting Mr. Morgan's gaze was like facing the headlights of an onrushing express train—if you could get off the track they were merely awe-inspiring, but if you couldn't they were terrifying.

The West Room presents a Pierpont Morgan less intimidating than in life, for here he is portrayed not in the honest lines of a photograph but in the flattering imagery of painting (above). The portrait hangs over the fireplace, facing the massive desk where Mr. Morgan sat for about an hour a day, receiving obeisance from subjects and objects such as the two sculpted angels kneeling beneath the portrait.

Also adorning the room are three paintings by Hans

J. P. Morgan by Frank O. Salisbury. Ceiling is Italian, 16th century. Desk was custom-made for Morgan.

Memling and portraits by Lucas Cranach the Elder of Mr. and Mrs. Martin Luther. The red silk damask on the walls is a faithful modern copy of the original pattern, which gave up the ghost after 50 years of New York pollution. Light filters through stained-glass windows and shines on the Stavelot Triptych which purportedly contains pieces of the True Cross. Visitors must stay behind silken cords, within gasping distance of the gilt reliquary. Set into it are six enamel rondels depicting scenes of the conversion of Constantine and the supposed finding of the True Cross by Constantine's mother. A single medallion, of quality similar to these, was auctioned recently for $2.2 million. In the reliquary, the rondels form a frame for two remarkable Byzantine enamels that illustrate the Crucifixion and bear the relics.

Set into one wall are the large doors of a steel vault. Inside, secure from public gasps, are treasures such as the 13th-century Shah Abbas Bible (p. 82) presented in 1608 by the Primate of the Polish Kingdom to Abbas the Great, King of Persia. This "Bible" consists of 43 leaves of Biblical illustrations, each a rare work of art.

Today the Morgan has about a thousand medieval and Renaissance manuscripts—the most extensive and beautifully selected on this continent. There are more than 2,100 incunables—books printed before 1501—including the Constance Missal, which some had held that Gutenberg printed before his Bibles. The Morgan has the most important collection of master drawings in this country for the period before 1800; the only comparable collection on this side of the Atlantic is the Metropolitan Museum's. There are thousands of letters and documents by Renaissance notables, thousands of letters from great authors of the 18th and 19th centuries, and the nation's foremost collection of early children's books. Pierpont Morgan could hardly carry a tune and he studiously avoided concerts, but years after his death the Morgan became a vital depository of musical manuscripts—including the world's largest trove of Gilbert and Sullivan under one roof—which now rivals that of the Library of Congress. When the Dannie and Hettie Heineman collection was given to the Morgan in 1977, it included not only a mass of musical autographs but 101 letters from Voltaire to his niece and mistress, Madam Denis—to be added to the 205 already on hand. Recently, the Morgan, where one *can* judge a book by its cover, exhibited its most notable bookbindings. "Only the British Library could have put on such an exhibition, covering so many centuries," Mr. Ryskamp said, "but even that great institution would have had trouble finding comparable works before the year 1000."

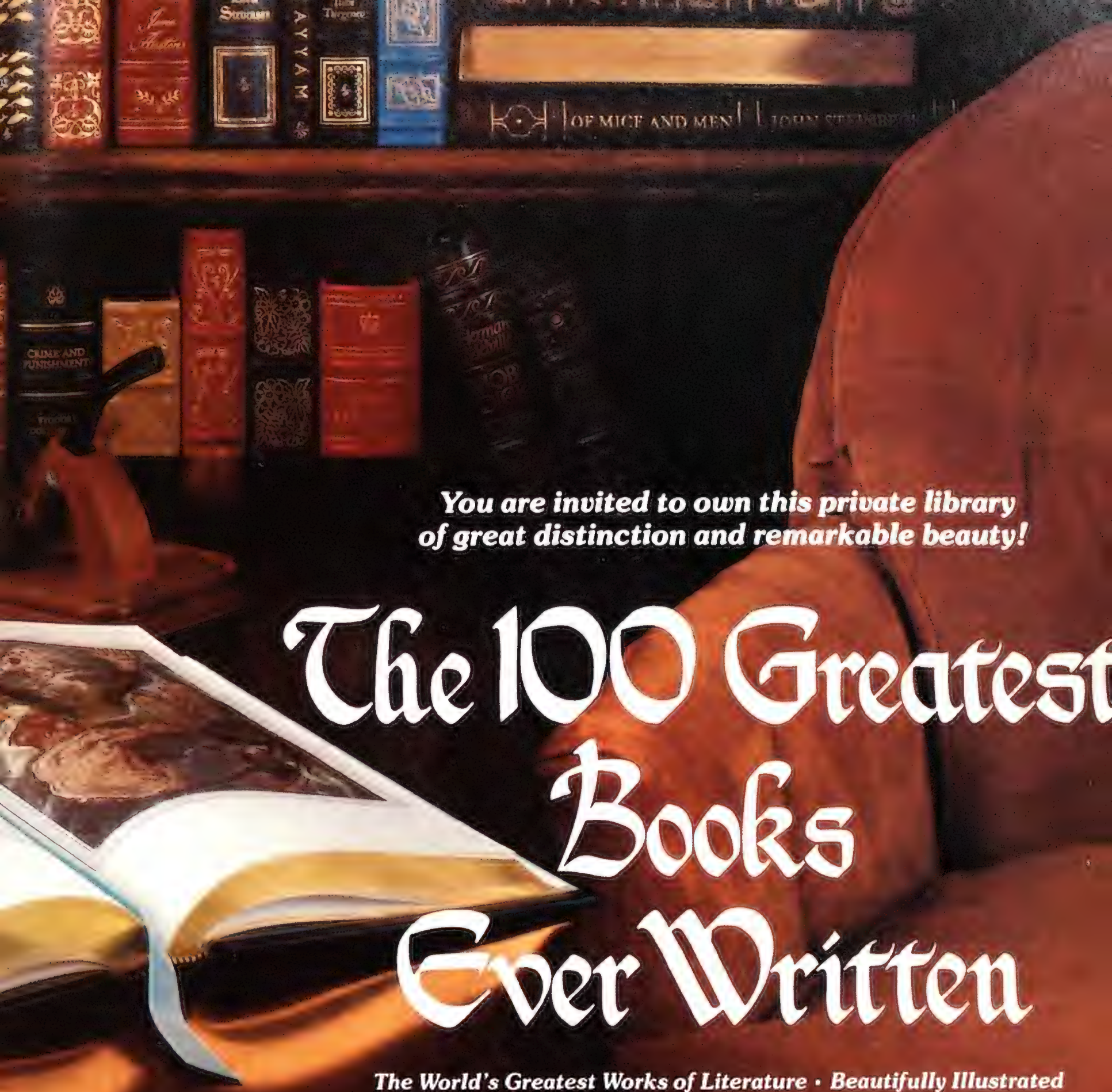
*Morgans still play a part*

J. P. Morgan died in 1943, and his home at 37th and Madison is now headquarters of the Lutheran Church in America. But Morgans are still patrons of the library: Henry S. Morgan, son of J. P., is president of the trustees, John P. Morgan II is a vice president, Charles F. Morgan is treasurer. Mr. Ryskamp must nonetheless spend a great deal of his time raising money, and it takes determination and ingenuity. The Morgan is burdened with a reputation for wealth and elitism, and so has had trouble obtaining grants from government agencies, though exhibits are free and the Morgan lends to others and has a considerable publishing program.

When he is not on the trail of lucre, Mr. Ryskamp must keep a wary eye on stock in hand. The library has detected signs of marauding infidels—some have tried to get through the roof to plunder the possessions that earlier generations acquired, at least indirectly, by purchase. At other libraries and museums this would be bad enough; at the Morgan it seems almost an affront to family honor.

A page from a 13th-century French manuscript collection of 43 leaves of Biblical illustration, known as Shah Abbas Bible. The Shah of Persia was given it by the Polish Primate in 1608.

Cover of Lindau Gospels, so named because it came from a convent on island of Lindau, Bavaria. It dates from late ninth century. Manuscript itself was written and illuminated at St. Gall, Switzerland.

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Walters Art Gallery, Baltimore

*By Dorothy Geary*

# Mighty Tamerlane became master of half the world

*At the head of highly disciplined armies, half a millennium ago, he terrorized and swept Eurasia from Moscow to Delhi*

Tamerlane's head was reconstructed from his skull by a Russian scientist who exhumed the body in 1941.

His people called him The Lord; his enemies called him the Viper and the Terror of the Earth. Five hundred years ago he was master of nearly half the world. When he died within months of his 69th birthday, his empire stretched from Mongolia to the Mediterranean, and from Moscow to Delhi. Fabulous though he was, the facts that have come to us are few, the unsubstantiated legends many.

Born in Central Asia in a fertile valley south of Samarkand in 1336, the only son of a petty Tartar chief, he grew into a powerful, headstrong youth who early distinguished himself by his intelligence and bravery as well as eloquence, which won him governorship of his native country from the conquering Tughlak Timur Khan.

Timur ("iron") was his given name, but after receiving a crippling arrow wound in his right leg he was called (by those who would disparage) Timur-i-lenk, Persian for Timur the Lame. In the West this was corrupted to Tamerlane. His right hand was maimed in the same incident, but neither disability affected his prowess in the saddle.

According to some accounts, Tamerlane ignored the prophet Muhammad's recommendation that four wives were sufficient and took to himself during his lifetime as many as nine wives and numerous concubines; but his first wife, Aljai, was his beloved.

By the time he was 33 years old (Alexander the Great was almost 33 when death halted *his* conquests), Tamerlane had consolidated his roving bands into a formidable army and driven the invaders from his native province of Transoxiana (now, roughly, Soviet Uzbekistan), making Samarkand his capital. Then, for nearly four decades, he rampaged through the Asian continent, crushing one country after another. His people—men, women and children—flocked to his horsetail standard with its gold half moon. He formed one of the greatest armies ever seen on the Siberian steppe for his campaign against Toktamish of the Golden Horde, whose regions south of Moscow formed a vast remnant of the old empire of Genghis Khan.

Most of Tamerlane's highly disciplined warriors

Citadel of Knights of St. John at Smyrna fell as Tartars stormed across wooden platforms to reach it.

Shir Dar or "Lion Bearing" madrassah, is one of colleges that surrounded the Registan, Samarkand's

wore armor of link mail, with their pigtails protruding from under pointed helmets. They carried two bows, one for rapid shooting and one for long-distance use, as well as 30 double-edged steel-tipped arrows, a small shield and either a straight-edged Persian blade or a scimitar. Many soldiers were equipped with ten-foot lances with iron knobs, and with short battle maces, both of which were useful for smashing through armor. There was an extra horse for each mounted man. Provisions included flour, barley and dried fruits. Herds furnished fresh meat and milk. Hunts were organized during marches to provide sport as well as additional provender. Saddlers, blacksmiths, armorers and tradesmen followed in wagons and carts, while heavy armaments such as siege machines, fire pots of naptha and mangonels (mechanisms for hurling missiles) were borne by long lines of bad-tempered camels.

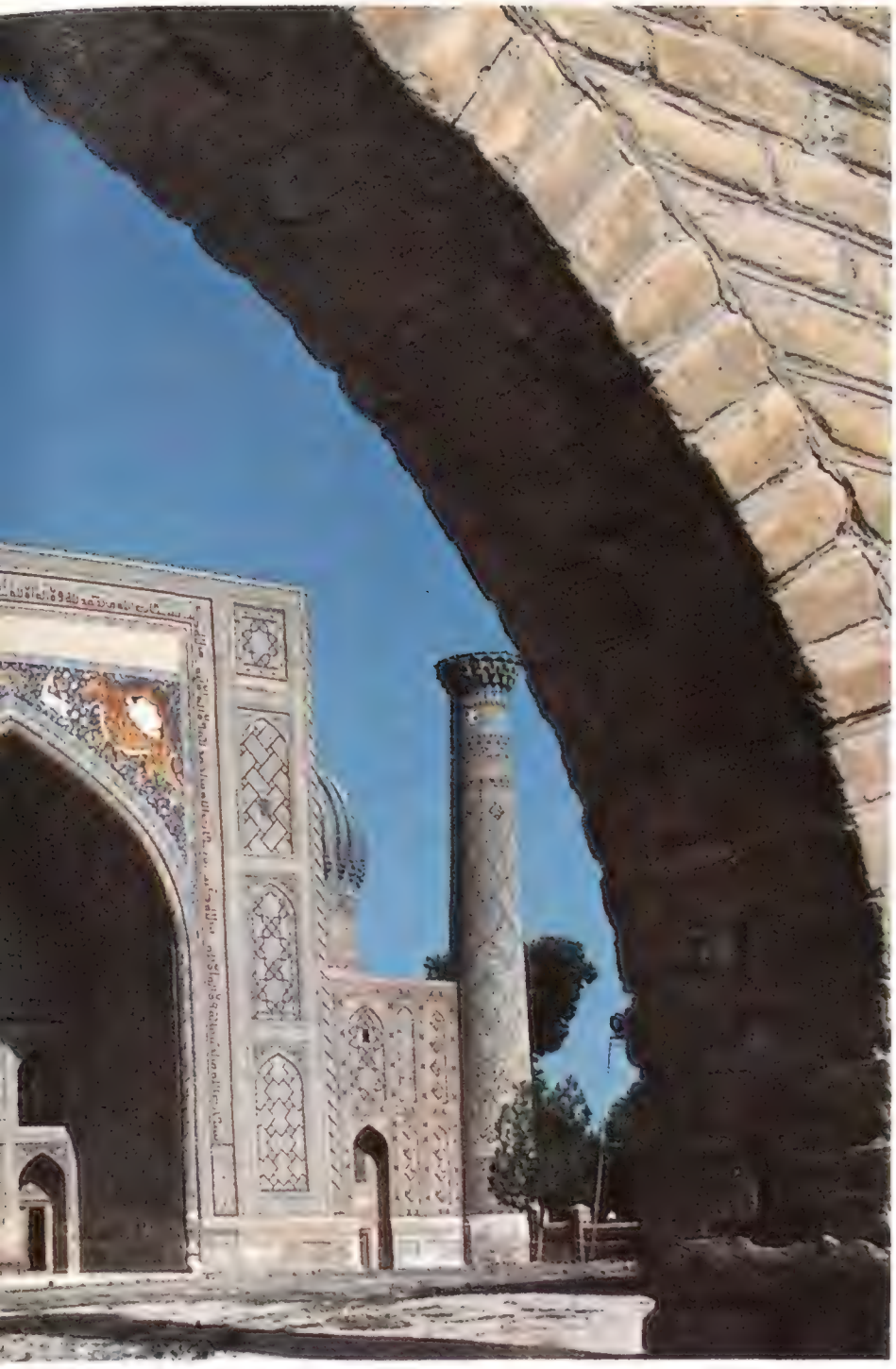
Silent and serious by nature, Tamerlane seldom smiled. His brain was quick and agile, and though he could neither read nor write, he spoke both the Turkic and Persian languages and surrounded himself with scholars, historians and poets. But he suffered fools poorly. "A wise enemy is less harmful than a foolish friend," he said.

Personal grievances were not forgotten. (Years later he found the chieftain who had lamed him and had him "shot through with arrows.") His discipline was harsh; the punishment for many offenses was death. Sometimes, possibly through a whim, he chose simple but effective measures: a coward in battle might have his hair trimmed like a woman, his face painted white and then be forced to march barefoot; or be stripped of his weapons, mounted backwards on a jackass and paraded about to jeers and taunts. Or, again, one who fell behind might find himself on foot the next day, his sand-filled shoes hung around his neck.

Tamerlane had three rules of battle: not to fight on his own soil of Transoxiana; not to allow himself to be put on the defensive; and to attack with the fierce swiftness of a hawk. He said, "It is good to go swiftly and break an enemy's power, before he has mustered his full strength." Once he gave an order, it was not rescinded. Intolerant of the weak, he was generous to the valiant, showering them with honors, ornate saddles, brocade robes, weapons and jewels.

Yet Tamerlane sometimes showed mercy, leaving a city which did not resist unharmed. Even when he wiped out a whole populace, he might spare mosques, academies, tombs and, being a practical man, water

*Veteran-traveler Geary wrote, in August 1970, about close-to-home adventures along the Chesapeake and Ohio Canal on a tandem bike with her husband.*



great square. It stood opposite and imitated
style of Ulugh Beg's observatory, built in 1420.

systems. If this story about the white, red and black flags is true, he was an early practitioner of psychological warfare. During the first day of a siege, Tamerlane's tents flew white banners, proclaiming to the besieged that if they surrendered they would be spared. On the second day, red banners were flown, indicating that the people could surrender, but their leaders would be killed. The black flags of the third day meant certain death for all.

When he encountered defiance or revolt, Tamerlane was pitiless. At his victory at Sabzawar, Afghanistan, he ordered that his victims be piled into a tower, one on top of another, and sealed up with bricks and clay. Given as well to treachery, he had 4,000 defenders at Sivas, Turkey, buried alive to fulfill a promise not to shed blood if they surrendered.

Freer Gallery of Art

Tamerlane's grandson, astronomer Ulugh Beg, greets retainers and harem in this 15th-century painting.

At Baghdad, Iraq, some 90,000 perished and 120 columns were built of their severed heads. These monuments of victory served as grisly warnings for others. "Behold the fate of lawless men and evildoers," announced the proclamations.

He alone ruled. When a kingdom was overcome or surrendered, he gave it to one of his sons or grandsons or a high emir as a feudal grant, but commands and laws came directly from Tamerlane. An elaborate system of spies, made up of laborers, fakirs, physicians, soothsayers, sailors, astrologers, traders, beggars and prostitutes, kept him informed of everything that transpired in his realm: what caravans were on what roads, who was overcharging in the bazaars in Samarkand, the dalliance of an obscure tax collector on the frontier. A false report meant death.

After his firstborn died and a second son fell in battle, Tamerlane became increasingly moody and spent many nights brooding over his chessboard. He was a master player and devised a more intricate game, doubling the pieces and increasing the squares to 110.

But he gloried in the rebuilding of Samarkand. When he made that ancient oasis city, said to be the

abode of Scheherazade, his capital in 1370, he found a community of weavers, papermakers, merchants and traders, living amid ruins. Alexander had sacked the city in the fourth century. In the beginning of the eighth century it was overrun by Arabs, then by Turks; Genghis Khan devastated it in A.D. 1220, killing three-fourths of the inhabitants. Tamerlane resurrected it, bringing in renowned scientists and philosophers, and building academies and libraries. He collected craftsmen, artists, architects and artisans from his conquests and set them to work mending the breached walls of the city, building wide avenues and lining them with glittering palaces and mosques.

Sweet perfume from the gardens filled the air. Artisans from Herat embellished the buildings with designs of glazed blue tile worked with threads of gold, and decorated the interiors with carved alabaster. Tamerlane had been impressed by an unusual dome he had noticed during the destruction of Damascus. He took the design back to Samarkand and it became the model for many of his buildings. Later it graced the Taj Mahal and sparkled in gold leaf atop Russian churches—the onion dome.

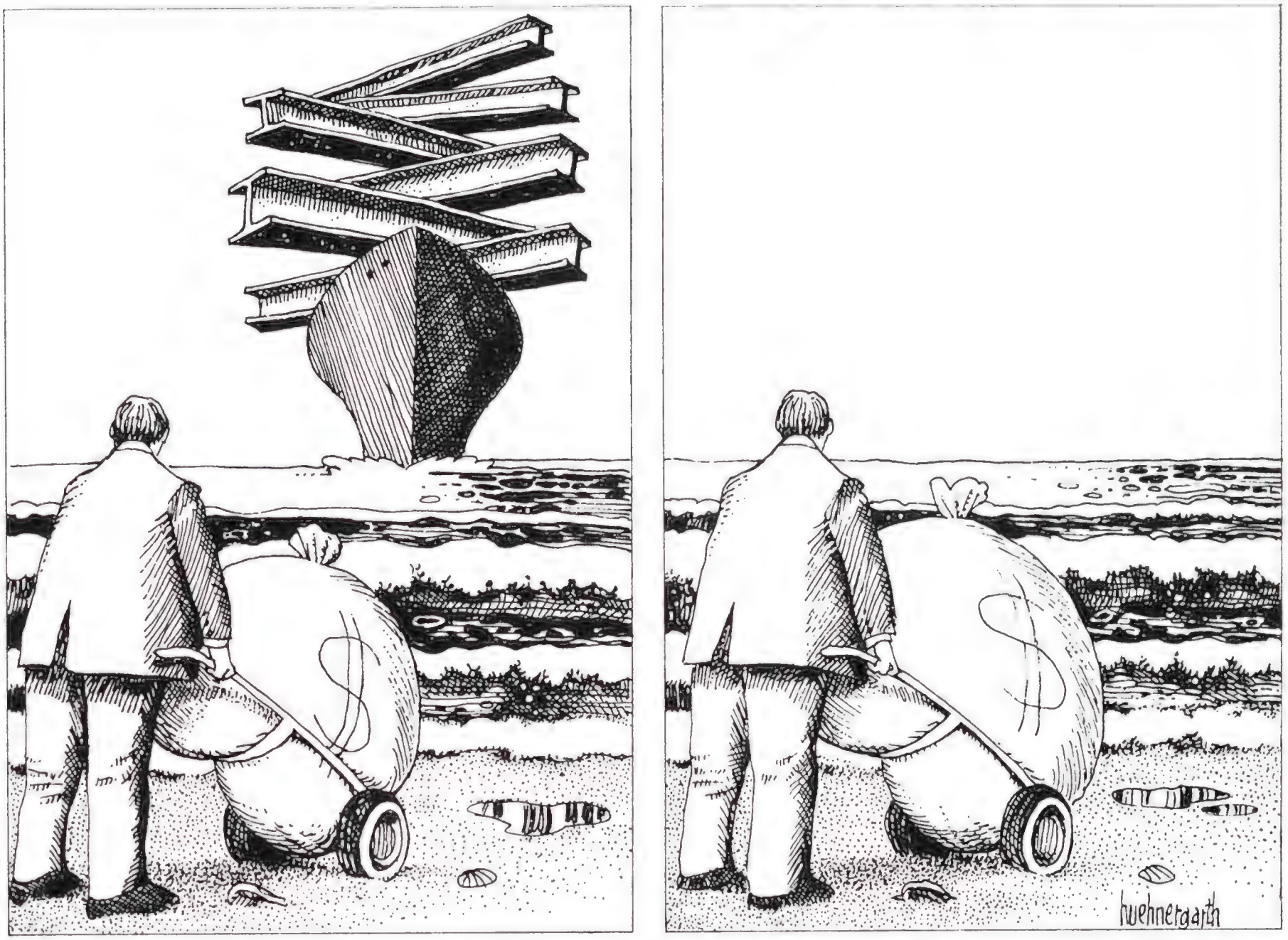
During all his conquests Tamerlane's home was his pavilion, an opulent tent with a domed roof hung with silken banners, its floor spread with rich carpets. A second pavilion traveled ahead of him and was set up and waiting for him when he finished a day's march. When not campaigning, he camped wherever the season was pleasant and the grazing good. His whole court migrated with him. He stayed in Samarkand only long enough to reward those who had served him faithfully and to incite his builders to greater efforts. When he objected to the height or appearance of a structure, he might have the architect or the officials in charge killed. Then the offending building must be destroyed and rebuilt in an almost impossibly short time. Although he had palaces in the city, he preferred to stay on the pleasant meadows called Kan-i-gil, beyond the city walls.

Walters Art Gallery, Baltimore

Tamerlane's soldiers, lowered in baskets, mop up remnants of Kipchak army hiding in cliff caves.

Tamerlane himself, under umbrella, surveys fight from top of cliff. These details are from one painting.

# Who's going to meet the growing need for steel in this country– and at what price?




If there's one lesson to be learned from America's oil crises, it's this: You can't always depend on foreign sources to supply how much of what you want, when you want it, and at a price you can afford to pay.

Unless we soon start expanding our domestic steelmaking capacity, 25 to 30 million tons of steel imports could be entering the U.S. market annually by 1985. (Compared to 12 million tons in 1975.) And then America could find itself at the mercy of foreign steel producers, as it is at the mercy of foreign oil producers.

A good reason to support programs that will help the American steel industry generate the additional funds needed to modernize and expand?

**Bethlehem** BETHLEHEM STEEL

Bethlehem Steel Corporation, Bethlehem, PA 18016

By the time the conqueror reached the age of 68 his eyesight was failing and his lame leg was so stiff that riding was almost impossible. Nonetheless, he was determined to subdue China, richest prize of all. Before launching that campaign he decided to hold a great festival on the plains of Kan-i-gil. Marriage ceremonies for six of the royal princes would be celebrated.

Envoys arrived bearing divers gifts: rich tapestries from Castile, florins from Byzantium and a giraffe and nine ostriches from the Sultan of Egypt (gifts in sets of nine were often presented, since the Tartars had a reverence for that number). Some 20,000 tents encircled the royal enclosure. The conqueror's audience pavilion was so tall it looked from a distance like a castle. Measuring a "hundred paces broad," it was big enough to hold 10,000 people. Its domed ceiling was hung with brightly colored silk canopies forming arches, its walls lined with tapestries and brocades, and the floor spread with crimson carpets embroidered with threads of gold. A dais, where Tamerlane sat to receive guests, stood in the center, covered with rich rugs and mattresses. Other royal pavilions were lavishly decorated with pearls and bands of many-colored velvets ornamented with spangles of silver gilt; the flowing curtains were encrusted with gems. Some pavilions were lined with fine feathers or skins of ermines.

A golden tree, its trunk thick as a man's leg, stood in the pavilion of Tamerlane's ranking wife. It was adorned with "fruits": rubies, emeralds, sapphires and pearls. Birds of gold enamel appeared about to peck at the fruit.

The plain rang with the music of zithers, dulcimers, lutes and organs, "singers and things wonderful and rare." The royal elephants, hides painted red and green, went through their paces; there were wrestling matches, puppet shows, magic-lantern shows and masquerades. Acrobats, buffoons and tightrope walkers performed. Hundreds of flower-decked booths displayed the art of craftsmen: jewelers, cotton workers, linen weavers, furriers, butchers.

Banquets began with drinking bouts—the ladies often drinking along with the men. The Moslem religion banned alcoholic beverages, and the Tartars had embraced the Moslem faith. But on festive occasions the Prophet's admonitions were forgotten. He who drank the most was a *Bahadur,* a "valiant drinker."

Hundreds of massive stone jars, five feet tall, stood around the banquet pavilion, filled with date wine, honey mead, liqueurs and strong spirits. Servants filled cups to the brim. Everyone downed the contents in one or two drafts, taking care to leave none. Immediately the cup was refilled.

When everybody was properly besotted, the feasting began. Huge hides were dragged in, filled with roasted rump of horse, saddles of mutton, camel humps, horse tripe formed into balls, and the whole heads of sheep. Great bowls of gold, silver and porcelain were passed,

Freer Gallery of Art

Shah Rukh, Tamerlane's son who maintained the core of the empire, triumphantly enters Samarkand.

# How St. Regis made a two-by-four that's 32 ft. longer than the world's tallest tree.

The world's tallest tree is a 368 ft. redwood in a national park near Eureka, California.

And yet we made a two-by-four that's 400 feet long–32 feet longer than the world's tallest tree. Forty stories of continuous two-by-four.

How did we do it? Simple. We glued 60 off-sized pieces of two-by-four together with hot-glued finger joints. And then got fifty men and women to carry it out into the field above and intentionally break it against a tree.

Our tests show that the joints are stronger than the surrounding wood.

Of course, our speciality is not 400 footers but eight footers–the so called stud, the main support of the home building industry. We're one of the largest makers of eight foot two-by-fours.

And, as in any operation where the raw material is non-uniform, there's a certain amount of waste. That's why we go out of our way to use the short leftover pieces. It's our policy to use the resource wisely. So we're out to use all the log–100%.

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We make prestressed concrete walls and floors. Insulation and vapor barrier papers. And even culverts.

All this reflects the marketing stance of St. Regis toward all our packaging, paper, lumber and construction products. To use the full weight of our technology in serving our markets and in renewing the forest resource our products come from.

**St. Regis—serving Man and Nature.**

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piled high with meat and covered with gravy. Folded pieces of bread were served on the side. It took two to three men to lift each bowl. This first course was not removed, as guests were expected to take the leftovers. "So ample was the store thus provided," commented the Spanish ambassador, "that had our servants cared to carry it all home it might have lasted us for the space of at least half a year." Next came a parade of stews and side dishes, then sweetmeats, pancakes, sugared breads and pastries made from ground nuts and dried fruits, followed by pounds of melons, pomegranates, peaches and grapes. Everything was washed down with jugs of koumiss, a fermented drink made from mare's milk sweetened with honey.

For the duration of the festival, Tamerlane proclaimed the suspension of all normal restraints; every pleasure was sanctioned. "Everywhere there was security, tranquillity, leisure and comfort. Grain was cheap, needs were satisfied; there was equality of fortune. . . ."

Then Tamerlane "rolled up the carpets of pleasure" and began feverish preparations for the long trek to China. October had passed, and his generals pleaded with him to wait for spring, but he would not be deterred. The astrologers had declared the time auspicious. He and his hordes, 800,000 strong, left Samarkand as the first snows of winter began to fall. The whole court came—wives, children and grandchildren. The royal treasury, under special guard, was followed by horsemen and their extra mounts, foot soldiers, endless trains of iron-plated supply wagons, she-goats, camels and cows for milk, and last the battle elephants.

In January 1405 they reached Otrar (now in Soviet Kazakhstan) and made camp in that citadel on Tamerlane's northern frontier, some 250 miles from Samarkand, where they would wait for the coming of spring. It had been a nightmare of a journey through blinding snow and sleet, the cold so intense that a man's spit froze as it hit the ground. Tamerlane, though he had traveled in a covered litter, had already suffered severely. Now he lay in the house of the governor, shaking with chills and "coughing like a strangled camel." Despite the unceasing prayers of the faithful and all the efforts of the court physicians, Tamerlane died on January 19, 1405, begging God to have mercy on his soul.

Most of Tamerlane's empire died with him. For a time one of his sons, Shah Rukh, and his favorite grandson, Ulugh Beg, held intact the core of the dominion—the lands from India to Iraq. As men of peace and learning, they introduced a whole era of splendor and enlightenment, making Herat, then in Persia, and Samarkand centers for poets, artists and scientists. Ulugh Beg set up his great observatory in Samarkand and there constructed his amazingly accurate astronomical tables.

Time and earthquakes have eroded part of the beauty of Samarkand. Now almost overrun by a teeming marketplace, the mosque of Bibi Khanum (Blessed Princess), which Tamerlane built for one of his wives, is still magnificent, with remnants of a vast dome of turquoise tiles once inlaid with gold and a soaring entrance portal. No one knows for certain who the blessed princess was, but there are those who say that the body under a white marble stone in the adjacent garden is that of Tamerlane's favorite wife. In the heart of the city, three restored madrasahs of gleaming, blue-tile mosaic border a great square. Built in 1417-1420 by Ulugh Beg, these once famed colleges offered studies in astronomy, mathematics and theology. Ulugh Beg's observatory was destroyed by religious fanatics, but a museum modeled after the observatory has been erected on the site and houses many of his findings. The Shah-Zinda, where some of Tamerlane's relatives, descendants and comrades in battle were buried, remains—a long avenue of mausoleums elaborately decorated.

The Gur-i-Mir still stands (opposite). Beneath its great ribbed dome of turquoise tiles is the tomb of Tamerlane. Here the conqueror of nearly half the world lies beneath a cracked slab of jade.

Legend had it that if his bones were disturbed, the world would be visited by a catastrophe beside which his own course of destruction would pale. In 1941, the Soviet paleontologist, Mikhail Gerasimov, dug up the body, reconstructed the features (p. 89) and judged the skeleton to be that of a powerful man, five feet eight inches in height (tall for his time). On the day of the exhumation, Nazi Germany invaded Russia.

Mausoleum of Gur-i-Mir in Samarkand, domed with turquoise tiles, shelters the tomb of Tamerlane.

*By Rudolph Chelminski*

# The cathedrals from vanishing era of great trains

*An international traveling exhibition put together by Paris' Beaubourg recalls days of glory when railway terminals were palaces*

"Arches of immense span, enormous roofs, powerful buttresses, give these palaces of modern industry a singular character, a kind of majesty, which strikes even the staunchest adversary. It would be strange if architecture, whose decadence and death has been proclaimed for so long, did not find the principle of its rebirth in the construction brought on by the railways."

The man who wrote these lines for the June 16, 1846, issue of *La Presse* was the Parisian writer Théophile Gautier. "Every faith produces the form of its temples," he went on. "When you compare the churches being built nowadays, it is easy to see that the religion of this century is the religion of the railway."

He was at least partly accurate; the trains did, indeed, represent much that the 19th century believed in. The stations were built as prime examples of the century's great and resourceful technology. The great railroad stations, and many of the smaller ones as well, were conceived not only for practicality, but for mystique and mission, too. They were partly to promote the services of one line competing with others, partly to please customers and partly the massive evidence of an era's prosperity and sense of power and promise.

In a sense, they might be considered examples of Man's tendency to express himself in one kind of heroic architecture or another. But between the stern medieval complexity of the cathedrals and the repetitive thrusting of the skyscrapers, the hundred or so years of railroad-station gigantism represent an incomparably rich grab bag of eclecticism, a period during which the dream borrowed from virtually every country and every style to express itself. Sometimes with felicity, maybe more often not, they went ahead and did it anyway—engineers and architects and the industrialists who provided the drive and the means—throwing up the most amazing variety of structures.

Some stations were disguised as neo-Gothic cathedrals (Saint Pancras, London), Loire Valley chateaux (Union, St. Louis), Greek temples (Euston, London), Roman baths (Pennsylvania Station, New York), neo-Romanesque churches (Metz), Hispano-Moorish palaces (Toledo, Spain). And then, of course, there is the Beaux-Arts splendor of New York City's Grand Central, a kind of cathedral.

The baroque excesses of railroad-station architecture, coupled with the 20th century's disdain for things "Victorian," eventually brought most of the great ones into disrepute in the best of cases, and demolition in the worst: both Euston and Penn Sta-

The *Train Bleu,* resplendent restaurant of Gare de Lyon, is a sumptuous example of Second Empire decor.

*The author lives in France, last wrote about curing the chestnut blight for* SMITHSONIAN*'s June issue.*

This is the delightfully baroque restaurant of Moscow's Kazan station, a reminder that even in a Soviet state people can take pleasure in pastel tones, gold moldings, chandeliers and mirrors.

*Photographs by Dmitri Kessel*

tions have been razed. As the rail lines atrophied under the onslaught of the airplane, the car and the truck, many stations were erased with hardly a second thought, or abandoned to the weeds.

Those remaining in use—especially in Europe, but in America as well—suffered the mockery of the right-thinking esthetic crowd, which competed with itself to certify its city's station as "the ugliest in the world."

The first signs of change began to appear in the early Sixties, when Americans—too few to be effective, to be sure—were protesting the destruction of Penn Station, and when novelist Louise de Vilmorin was urging her reading public and her old friend André Malraux to protect the restaurant of the Gare de Lyon from future depredations (p. 98). They succeeded, too: the hyperbolically overdecorated dining room was proclaimed a *monument historique* in 1972. Now, it appears the change of sensibilities is about complete. Grand Central looks safe at long last, and the American-born movement for the recycling of some stations to other uses has spread across the Atlantic to England and continental Europe.

In France, the sudden new prestige of railroad stations has received a kind of official consecration in an extraordinary show organized last winter at the Centre Georges Pompidou, popularly known as Beaubourg (SMITHSONIAN, August 1977), and now on a tour which includes Lyon, Milan, Brussels, Lausanne, London and, later, Holland, Sweden, Denmark and Germany. It is entitled *Le Temps des Gares* (The Age of Railroad Stations), and its designer is 39-year-old Jean Dethier, architectural counselor in Beaubourg's *Centre de Création Industrielle*. Other shows have demonstrated railroad rolling stock, he says, and some may have touched upon the stations themselves, but never in this depth (four years' research and preparation) or size (some 18,000 square feet of floor space).

The exhibition, combining photographs, paintings, meticulously executed scale models, sculpture, slides and films, is a typical first-rate French job of organization, although, as it happens, Dethier is Belgian.

"The stations are essential architectural testimony," he says, explaining the reasoning that led to putting his show together. "In this they are as important as the cathedrals. They bear witness to the creative genius of the 19th century."

Ideally suited to the Centre's declared role of displaying the cultural importance of the objects of everyday life, the railroad-station show drew close to a quar-

ter of a million spectators during the 100 days of its Parisian run, proving what Dethier had contended all along: that people are fascinated when reintroduced to the reality of their own world, but all too often, otherwise, are blind to it. If you live in London long enough, you don't see the red buses anymore, and the Eiffel Tower is just another part of the Paris scene.

"The railroad station is one of the most significant symbols of modernity, a mirror that reflects the society that built it. Every day millions of people pass through it, but they're busy and in a hurry, so they hardly ever see it. They just submit to it as part of the ritual of their lives. So I thought it would be interesting to analyze these places."

Courtesy of the Fogg Art Museum, Harvard University, Bequest-Collection of Maurice Wertheim, class of 1906

Dethier's analysis begins with the first uneasy steps of the clanking iron machines, a form of transport so unprecedented that much of its terminology was simply borrowed from other, more established ones. Thus, the early stopping points were often called *embarcadères* (wharves) in France before usage turned to *gare*—which itself was another maritime term with the same meaning of a place where barge traffic drew up and was temporarily shunted aside. As for their architecture, it is clear that at the beginning no one knew quite how to approach this revolutionary new phenomenon. One of the two oldest stations is Edge Hill in Liverpool, designed by George Stephenson, the man who a few years before had built the first public railroad using steam locomotion to haul freight and passengers from Stockton to Darlington. Edge Hill is a shamefully abandoned ruin now (p. 107), but we may hope that the English, who know a thing or two about preserving monuments, will get around to putting it back in shape. It was opened with fitting pomp in September of 1830, only five years after Stephenson's pioneering Stockton-Darlington line, and in the same month that voyagers began rolling giddily to Manchester behind his renowned *Rocket,* capable of speeds up to 36 mph. Edge Hill was a fortresslike structure fitted into a deep cut in the earth. Contemporary paintings made it appear more or less grand, but recent photographs give it much the aspect of a Maginot Line strong point. It was as architecturally

At left is one of a series of paintings of Paris' Gare Saint-Lazare under different light conditions, painted in 1877 by Claude Monet. Above, the same huge glass-vaulted terminal as it appears today.

Royal Holloway College, London

curious in its way as was the Gare de l'allée Verte in Brussels (1835), which looked like three wooden barns.

Very rapidly, though, the basic dynamics of the rail problem—how to impress people with the majesty of your terminal, how to shelter them from the elements, and how to deal with the smoke and soot from the belching monsters—brought a technical response from the designers which dictated the railroad stations' configuration for the rest of the century and well into the first half of the next one. Put in simplest terms, the station became a facade with a shed behind it. Typically, the facade was rectangular and the shed semicircular, which reflected the techniques and esthetics of the period, but which also signaled a dichotomy that marked railroad-station construction throughout the hundred-odd years of its Golden Age—a conflicting approach to design between architect and engineer.

Stephenson was a self-taught engineer, and the railroads and their equipment were supreme engineering achievements of the day. The same men who laid the roadbeds, designed the engines and built the bridges were also responsible for the sheds of the stations: they were the ones with the training and technical know-how for the job. But if the sheds began as simple rustic enclosures, they grew to incredible, Brobdingnagian dimensions as the years passed and as the railroad networks multiplied.

The early solutions of simple wooden framework and gabled roofing soon proved to be insufficient. A new technology was needed if they were going to go higher and wider, and it was right there waiting for them: the iron and glass "greenhouse" construction which will forever be typified by the giant Crystal Palace, built in London for the Great Exhibition of 1851. Once this was adopted as the fundamental grammar, the tours de force succeeded one another with dazzling regularity. Cast and wrought iron gave great strength for relatively small dimensions, could be prefabricated into any desired decorative shape and, when combined with glass roofing and walls, produced buildings that were breathtakingly light and airy. The addition of crystal chandeliers for opening ceremonies gave the effect of a fairy palace. One inauguration, that of the new Gare du Midi in Brussels in 1882, has been described as a "Bruegelian festivity."

"The stations became the new gateways to the cities," Dethier explained, "and within the heart of the cities they expressed the fascination with new technologies. Gigantism was in the air."

At the other end of the drawing board, though, the architects were working in virtually pure contradiction to the engineers. Their part of the station, the one that showed its face to the world, drew its inspiration exclusively from the past. Everything was variations on a theme, when it wasn't outright plagiarism. The fashion then was academic, to be sure, but never was the 19th century's mania for aping history more apparent than in the facades of its railroad stations.

"It's a strong paradox," remarked Dethier. "Very strange. The railroad stations were a building revolution without precedent, and yet they were realized with copies of history. You can explain this by the

London's famous Paddington Station today shows the same architecture but a very different aspect from scene depicted opposite.

Story-telling work of English artist William Powell Frith was popular with his Victorian countrymen. Left, his Paddington *Railway Station*, 1863.

history of art, of course, but there is also a psychological factor to be considered. In the last century, people were worried about what the new technology was going to bring them. The passing from slow history to the industrial future was very brutal. They worried about that in the same way we worry about, say, nuclear energy. In order to compensate for this, the architects sought to reassure the public and to give them a feeling of security with images from history. You might say they camouflaged the technology."

Meanwhile, for train sheds the engineers were hurling skyward daring creations of vaults and arches, as light and glittering as the facade was massive and weighty. In the final analysis, most of the great stations were statements of incompatibility; the two disparate elements were simply stuck together, with no attempt at architectural resolution.

But this does not mean that it was always the engineers who succeeded in their missions while the architects flopped. We are at last becoming a little bit less grumpy about the last century's excesses, now that our own is drawing toward its final two decades. As we troop obediently through one anonymous airport after another, or—especially in Europe, where they are still building new railroad stations these days—as we experience the stunning facelessness of the "international style" which pretty much dominates contemporary public-transport architecture, we cannot avoid the conclusion that the old days must have been a lot more fun. Where is the dreaming room in an airport—next to the tax-free shop? Ah, but the *Train Bleu!*

The *Train Bleu* is the restaurant of the Gare de Lyon in Paris, the one that was saved by Louise de Vilmorin's insistence and the personal intercession of André Malraux and his successor, Jacques Duhamel. There is no other eatery in the world quite like it. The Second Empire decor that envelops arriving customers is so astonishingly sumptuous, the proportions so overwhelming, that life within seems to take on a new dimension, complete with celestial music. To the right and left soar walls decorated to the last square inch with creamy, sculpted paneling and gilded wood, plaster and ironmongery. One set of windows looks directly down over the *quais* of the station while the other—rows of proscenium arches with Paris itself as a backdrop—are framed by heavy, red velvet curtains and then even further embellished by spiderweb filigrees of white macramé. The gilded chandeliers spread soft light through frosted glass over a series of brilliantly colored Beaux-Arts frescoes allegorically representing the French provinces and then-colonies. They are so naively, so gloriously pretentious that they are beautiful in spite of themselves. Everything fits: the female bodies lolling under the arch of the ceiling (suspended, it appears, by their bottoms) are luscious constructions of *crème fraîche,* raspberries and *fromage blanc.* The overall effect is so dreamy that it is stupefying.

Just as every emerging nation today must have its modern airport, every city with any aspirations to greatness a hundred years ago had to have at least one or, more often, several stations of imposing dimensions and decor. (Paris, for example, built seven major ones,

not counting those for the local commuter lines.) These edifices were, as Dethier points out, a direct reflection of the society which built them, as well as being an unbeatable showcase for the "official" art of the dominant culture: the *Belle Epoque* geniality of the Gare de Lyon, a showcase of the Universal Exposition of 1900; the czarist grandiloquence (although it was completed under the Soviets) of the Kazan station in Moscow (p. 99); Great Britain's unabashed declaration of imperialist mission with the Victoria Station in Bombay; the art of urban renewal on a titanic scale, as carried out in Paris by Napoleon III and his prefect of the Seine, Baron Haussmann, in which the railroad stations were brought into a master plan incorporating the new boulevards and avenues; the posturing of Italian Fascism, as represented by the eerie Milan central station; or, even more disturbing, Hitler's plans—aborted—for two immense Berlin stations.

It is doubtful that the designers, builders and administrators of the rail networks realized how thoroughly they were caricaturing their own society with their railroad stations. Industry reigned supreme, and the constraint of time was presented not only by the mechanical precision of departures and arrivals, but by the stations' lofty clock towers as well, a central facet of most station architecture, symbolically dominating and supplanting the old church steeples. The station personnel themselves were elevated to esteemed social rank, and strutted and fretted in uniforms directly copied from the military. And there was the matter of classes. Even today French subways are divided into two classes, but in the Golden Age of the stations there were three railway classes, separated by *locked* waiting rooms.

In times of war or upheaval, both the real and symbolic importance of the stations becomes dramatically multiplied. As points of departure for men and

Private collection, Geneva

Contemporary artist Domenique Appia painted *L'empire des gares,* a kind of Tower of Babel, in 1978.

French artist Jacques Tissot was popular in England, where he painted *Lady Waiting at the Station,* 1874.

Dunedin Art Gallery, New Zealand

# If you like the gasoline shortages of the 70's, you'll love the electric power shortages of the 80's and 90's

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Our nation's present generating capacity is 540,000,000 kilowatts. Conservative forecasts show that by 1990 we must be able to produce 300,000,000 kw more; by the year 2000, we'll need 200,000,000 kw on top of that.

Enough power plants to produce another 500,000,000 kilowatts must be built in just two short decades.

This is a formidable undertaking. Half the generating capacity needed by 1990 isn't under construction yet. Coal-fired plants started this year will take up to 10 years to complete, nuclear plants up to 14.

Why 2½ to three times longer to construct a plant today than 10 years ago? Because you must figure five to seven years just for the paperwork on, say, a million-kw coal-fired station.

This is intolerable.

Complying with a constantly growing tangle of overlapping, unclear, sometimes irrational, energy rules and regulations consumes weeks and months of expensive time. Every day of delay on a million-kw plant adds more than $300,000 to its cost.

At least with gasoline, patience and money can eventually get you a few gallons. But you can't carry kilowatts in a bucket or store them in a tank.

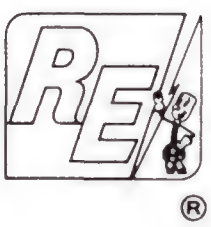
America can't afford these delays.

Consumers can't afford to pay the bill.

Energy rules and regulations can, and must, be streamlined—analyzed, consolidated, and eliminated where they serve no real purpose.

The regulatory process is intended to facilitate the achievement of objectives in the public interest. Certainly, for a nation as utterly dependent on energy as ours, it's in the public interest to regulate utility industries. Sensibly.

## A message from the nation's consumer-owned nonprofit electric cooperatives and power districts




### America's rural electric systems

For more information, write: Dept S, National Rural Electric Cooperative Association, 1800 Mass. Ave., NW, Washington, DC 20036.

matériel toward the front, they were naturally prime targets for artillery and bombing. As points of return, both the joy and tragedy were forever embodied by the famous Ernst Haas photograph of a mother at the Vienna station, hopefully displaying the photograph of her lost son, fresh and innocent in his German uniform, to the tattered prisoners returning home. The French, who have a way with gestures, awarded the Gare de l'Est the Legion of Honor as if it were a human being for its heroic performance in saving the motherland during the first World War, while the Nazis, gruesomely practical, created the most heinous *bahnhofen* of all at their death camps. End of the line, indeed. At Treblinka, the commander pushed his maniac perfection to the point of having his men paint up the arrival shed as a false station, including trompe l'oeil doors marked first and second class, gay beds of flowers and even an imitation clock.

If American politicians have made whistle-stop speechifying in rural stations a national tradition, the Soviet revolutionaries were quick to latch onto the use of trains and stations for their agitprop. "Without hesitation," wrote Mayakovsky in 1918 in his first decree on the democratization of art, "painters and writers will take up pots of paint, and by the means of the brushes of their art they will illuminate, they will cover with drawings the flanks, the brows and the breasts of cities, stations and the eternally fleeing droves of coaches."

But the most direct appeal to artistic sensibilities was made before him by Emile Zola, who railed—to be sure—against the reactionary nature of his contemporary esthetes: "Our artists should discover the poetry of stations as their fathers found that of forests and rivers."

The poetry died with the advent of the car and the airplane. The magnificently pretentious architectural statements of the stations became muted apologies in which, as Dethier says, "can be read the characteristics of our society: an overwhelming uniformity, an indifference to the place and to the public." Today's stations, he says with a sigh, are more like shopping centers or office buildings than anything else, and it is a sad commentary on our epoch that all we are able to offer ourselves in the way of "transportation" art are billboards, advertising displays and Muzak.

Although the past five or six years have seen a sudden appreciation of Europe's old railroad stations, one of Dethier's avowed motives in organizing *Le Temps des Gares* was to reinforce the new consciousness and help prevent any further demolitions of the sort that took Penn and Euston stations from us. His determination is not merely a matter of personal taste.

"Architecture and urbanism are not neutral elements," he insists. "They are replete with political, sociological, economical and artistic considerations. If we really want to open our eyes, we can find in them the whole evolution of modern society. The railroad station is the finest image of the epic of modernity."

For the hundreds of thousands who have already seen his show, and for those who will continue to do so during its travels over the next couple of years, it seems that he has already won his case. It is certain that none of them will be able to simply submit to a station anymore by walking through it without looking at it. That in itself is no mean achievement.

National Railroad Museum, York, England

Opened in 1830, the work of the great engineer George Stephenson, Liverpool's Edge Hill Station today is a time-ravaged ruin, opposite. Above it is as it used to be.

# Do you make these 10 common typewriter mistakes?

*Patented Correction Cartridge*

Most people make their fair share of typing mistakes. But the biggest mistake you can make is buying the wrong typewriter in the first place. There are ten things you should check out. They can help you avoid making these ten typewriter mistakes.

**Check out the correction system.** There are several typewriter correction systems, but they don't all work equally well.

This Smith-Corona® electric portable has a unique cartridge ribbon and correction system that lets you change ribbons in seconds without touching the ribbon. It also lets you correct typing errors quickly, neatly and easily.

**Test the feel.** Are the slope and height of the keyboard comfortable? The size and shape of the keys?

While you're about it, compare the feel of a Smith-Corona electric typewriter against others—we welcome head-on comparison.

**Try the touch.** A responsive touch makes for easier typing. You want a touch that is prompt, easy and dependable. For instance, note how smoothly the Smith-Corona performs functions such as carriage return and back-space.

**Listen to the sound.** Believe it or not, a typewriter has a sound of its own. If it sounds tinny, beware. It may indicate that the typewriter's construction is too light.

**Note the look of the type.** Lines and individual letters should be straight. The impression should be crisp, clean and even. The print quality should not vary over the page.

**Consider the overall design.** You want a typewriter that looks contemporary but not eccentric. Smith-Corona, for instance, is an example of classic good design you'll live happily with for years.

**Look at the carrying case.** Does it have double walls for air-cushioned protection? Sturdy latches and hinges? The case for this typewriter does.

**Compare prices.** A typewriter that sells for a lot less than others might be a lot less typewriter. Where price difference is minimal, you probably should go for the one that tests best.

**Ask who makes it.** Smith-Corona makes every typewriter that bears its name—which is not true of most other brands.

So consider the maker's reputation. A company with a solid reputation will still be around tomorrow and in the future to give your typewriter necessary service and maintenance.

**Try the Smith-Corona carbon film ribbon.** We offer a re-usable nylon fabric ribbon, good for ordinary typing jobs. This is the only kind most portables offer. But we also offer carbon film ribbon in five colors. It's the same kind of ribbon that the most expensive office typewriters use, and it's perfect for jobs requiring a crisp professional look such as term papers or a resume.

Once you've made these ten typewriter tests, we'll think you'll know why more people prefer Smith-Corona electric portable typewriters than all other brands combined.

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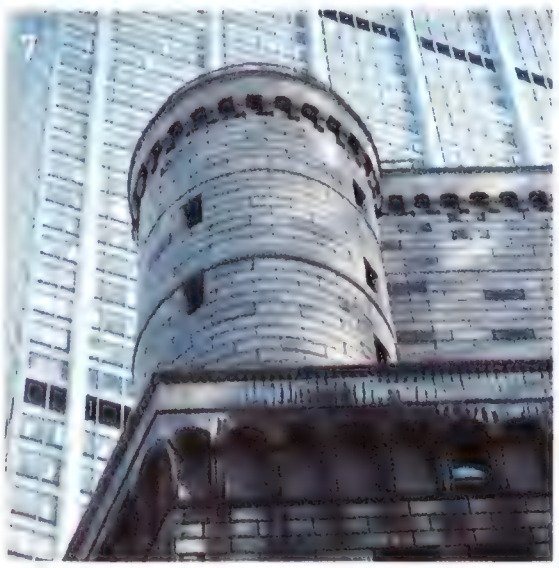
# Guess what's under these tower tops

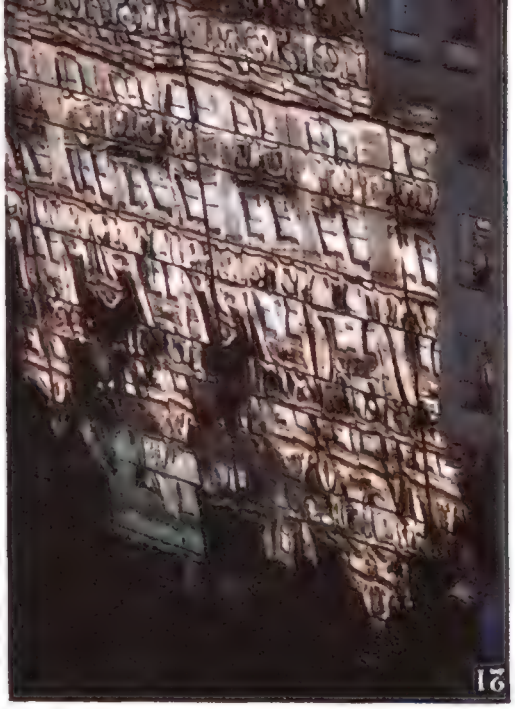
*The crowning intricacies of skyscraper architecture are not always seen from street; for identifications, turn to the next page*



*Photographs by Henri Dauman*

**1** American Telephone and Telegraph's "Spirit of Communication"; **2** Apartment House at 45 East 66th Street; **3** Park Row Building; **4** Barbizon Hotel; **5** Municipal Building; **6** Calvary Baptist Church; **7** Federal Reserve Bank of New York; **8** U.S. Courthouse; **9** Statue of Verdi and Hotel Ansonia; **10** Helmsley Building (formerly N.Y. Central Building); **11** Consolidated Edison Building; **12** Waldorf Towers; **13** Genesco Building (730 Fifth Avenue); **14** Woolworth Building; **15** Bank of New York at 48 Wall Street; **16** Metropolitan Life Insurance Building; **17** Chrysler Building, left, and 331 Madison Avenue, right; **18** Sherry-Netherland Hotel; **19** General Electric Building; **20** New York Life Insurance Building; **21** Plaza Hotel reflected in Solow Building.

They are all Manhattan towers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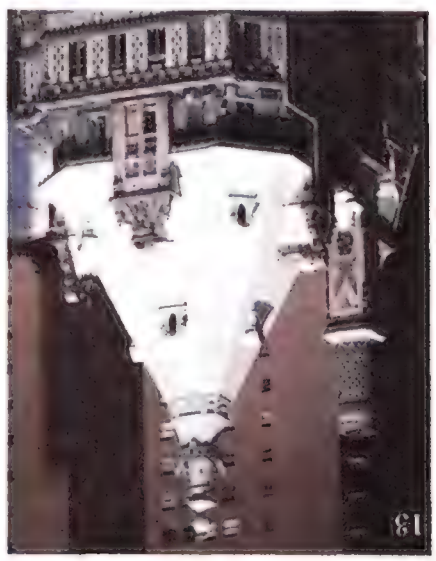
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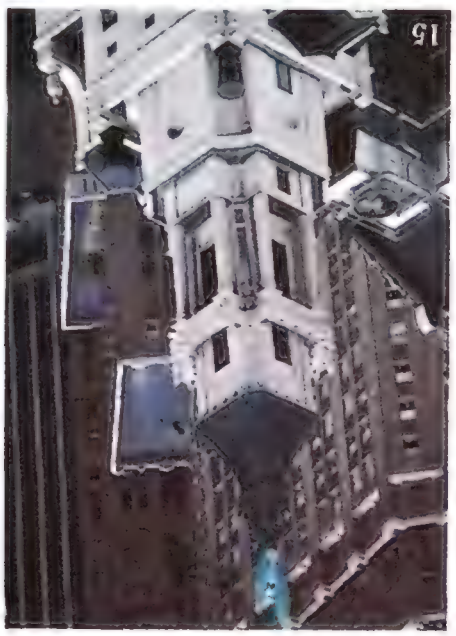
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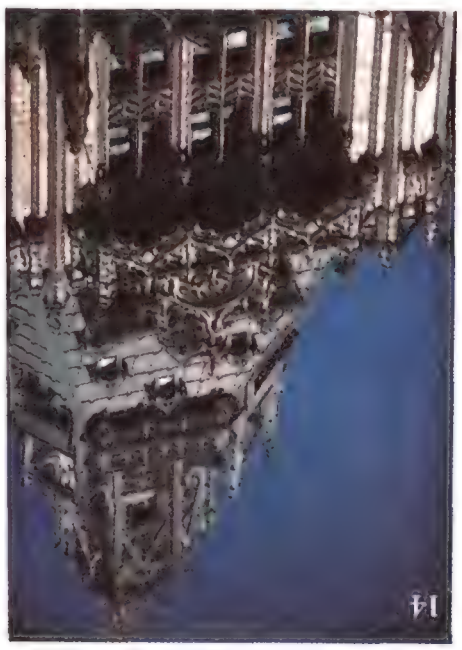
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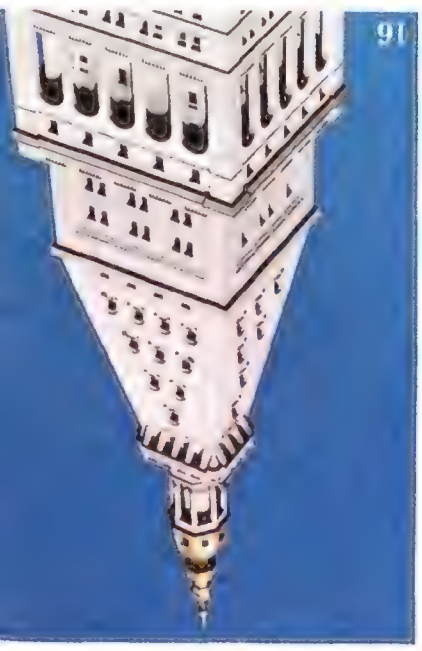
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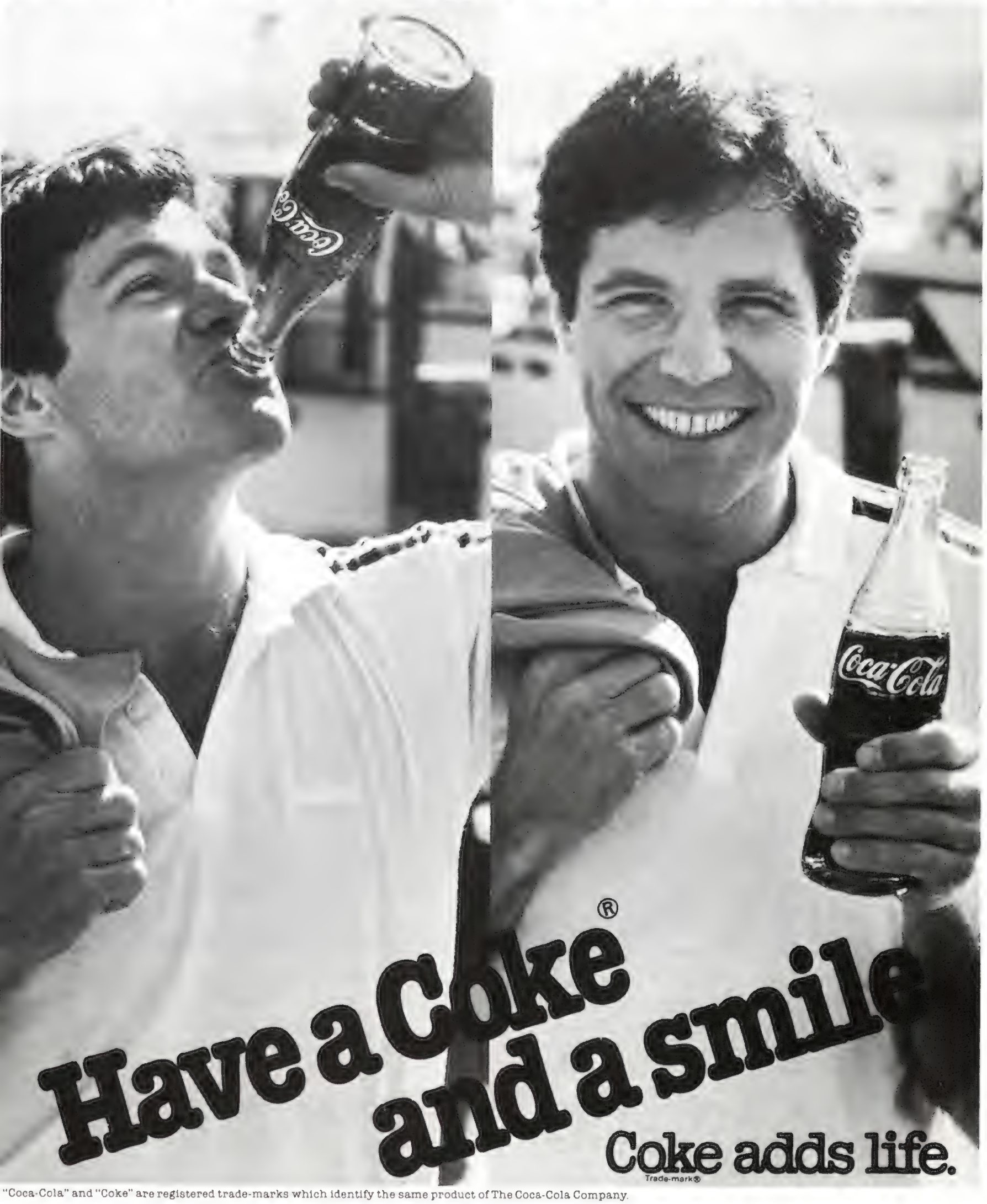
# ONE GOOD THING LEADS TO ANOTHER.

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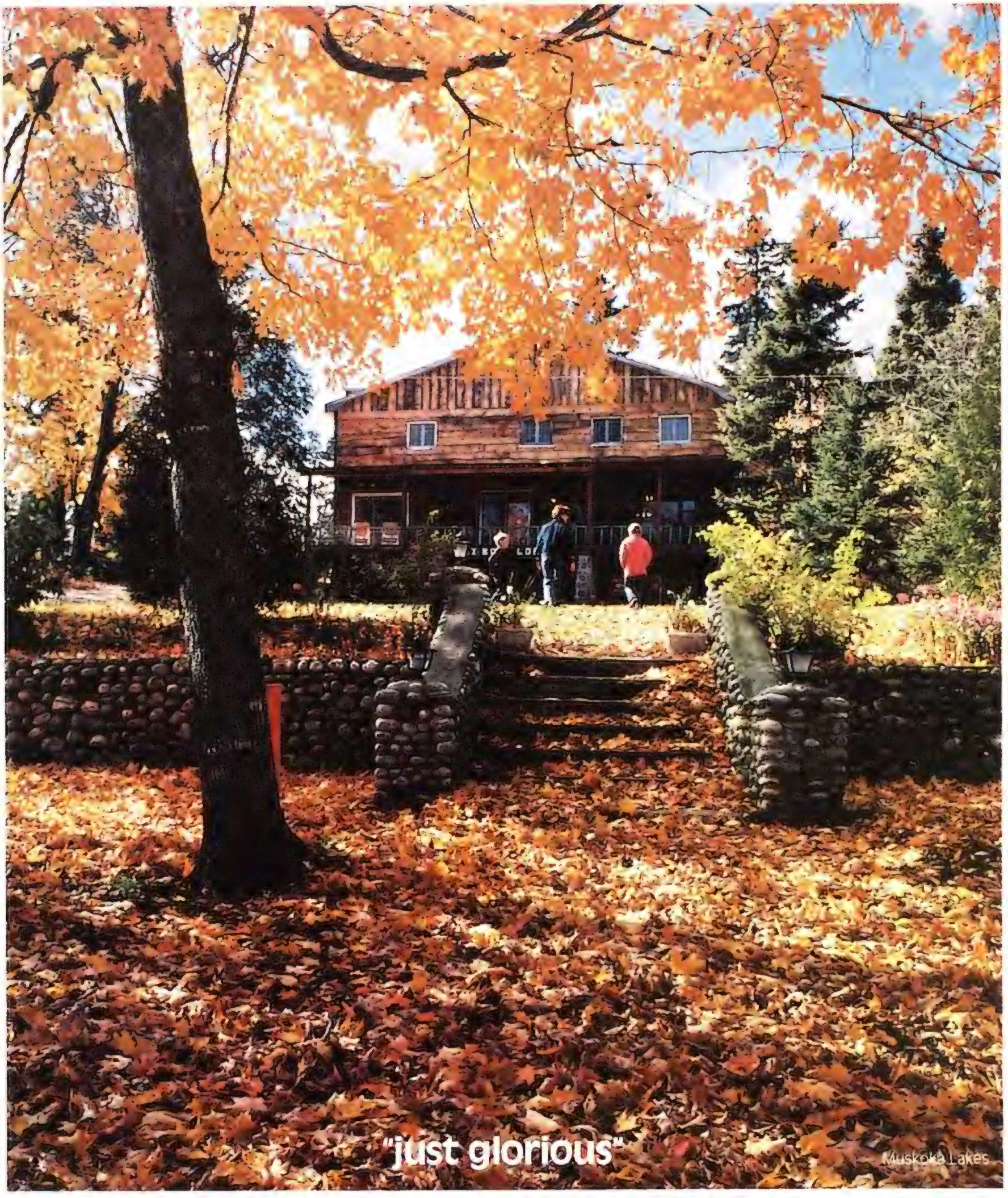


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*Text and drawings by Benjamin Lawless*

# *A curmudgeonly view of air comfort*

*Next time you're crammed into an airliner seat, remember that during the history of flight, it's been worse. Also maybe better*

During the first years of the Air Age, Orville and Wilbur Wright apparently were convinced that any future passengers in their flying machines would be more comfortable lying on their stomachs. Had the brothers been right, back in 1903, flying on a jumbo jet three-quarters of a century later amongst 500 horizontal passengers might have been a strange experience.

By 1908, however, most aerial pioneers had concluded that sitting was to be the flying posture of the future. They began to install rudimentary passenger seats aboard their monoplanes, biplanes and triplanes. An American aviator named Samuel Franklin Cody, who fascinated his British friends by dressing as an Arizona sheriff, bolted a metal plow stool to the lower wing of his biplane. Glenn Martin was more thoughtful. Casting a worried glance at the propeller whirling a few inches behind his passenger's head in his "pusher" biplane, he designed perhaps the world's very first aerial seat back. Fortunately for the passenger, it was not reclinable. The safety belt was not thought necessary at first, but as some passengers began disappearing during turbulent weather, or bumped to a stop ahead of the airplane during rough landings, the safety belt became a standard attachment to the passenger seat.

The idea of sitting in flight was not new. Back in 1798, at the beginning of the balloon age, one of history's most unusual aircraft seats was a cavalry saddle. A certain Monsieur Tétu-Brissy decided to ride his favorite horse while ascending over the outskirts of Paris under a hydrogen balloon. Nineteen years later

In 1817, balloonist Margat ascended in his dragoon uniform while riding pet stag, Coco.

These Iron Curtain seats were called "people shapers" by a socialist whose knees later required therapy.

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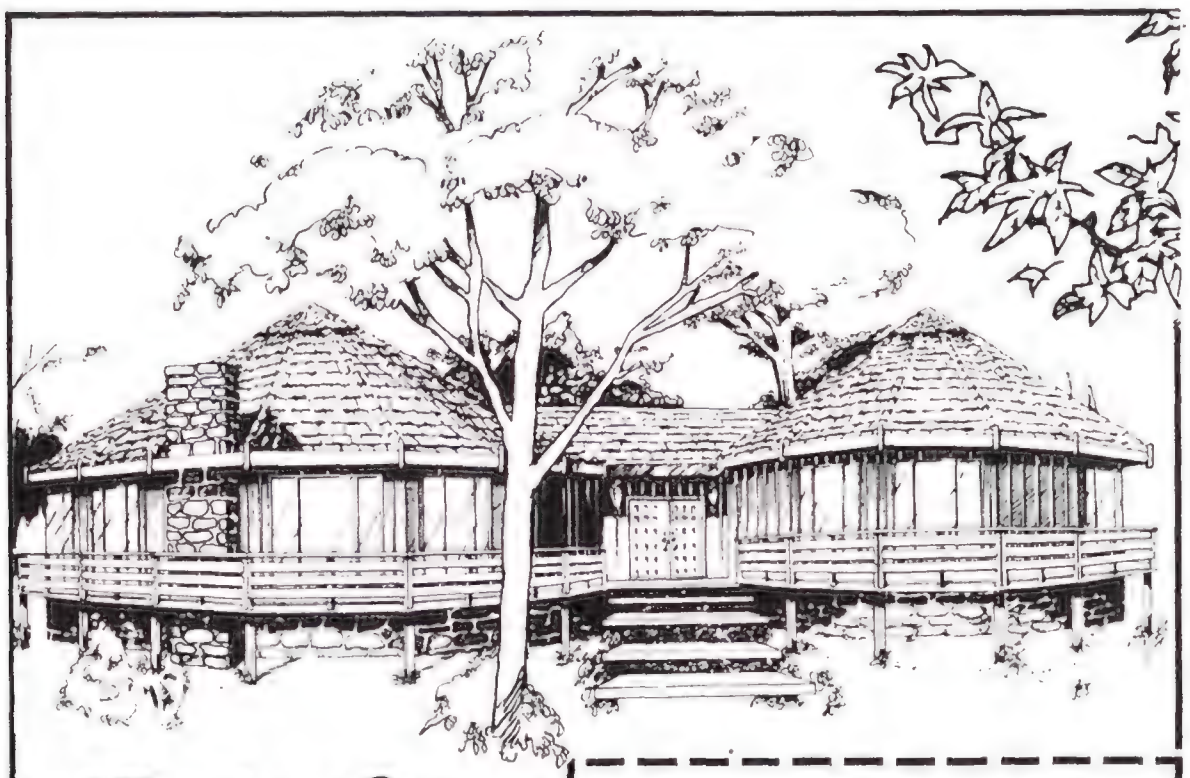

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the balloonist Margat made an ascension in full dragoon uniform while riding his pet stag, Coco. Perhaps it was the inspired lunacy of these two gentlemen that gave lighter-than-air travel its "high giggle factor" and contributed to the failure of balloons as popular passenger-carrying flying machines.

Airplanes set out early to lure paying passengers. On January 1, 1914, Tony Jannus, flying a Benoist seaplane, began the world's first fixed-wing commercial air service by flying the ex-mayor of St. Petersburg, Florida, to a landing at a Tampa dock. "Please unbutton my coat," requested A. C. Pheil upon alighting, his hands smeared with grease from helping the pilot make adjustments during the flight. After bidding $400 for the privilege, Pheil had spent the entire 23-minute flight perched on a wooden seat beside the pilot, completely exposed to the chilly winds of what happened to be an unusually cold Florida winter.

A year earlier a Russian designer, Igor Sikorsky, thoughtfully provided heated cabins and comfortable chairs for passengers aboard his four-engined *Ilia Mourumetz*. Not only was this airplane far ahead of its time, but Sikorsky expected that his pilots, when their flying duties permitted, would circulate among the passengers to serve snacks. Anyone braving the winds could promenade along an open deck atop the fuselage. Unfortunately, World War I was just around the corner and this first jumbo airliner was ignominiously assigned to military duties on the Eastern front.

*Windows used to open*

In the summer of 1919, two heavily bundled passengers squeezed into the canopy-covered rear cockpit of a De Havilland biplane on the first scheduled London-to-Paris flight, an outgrowth of military flights that had carried British officials to the Peace Conference. Less than a decade later, 20 people made the same flight as Imperial Airways "Silver Wings" service brought the concept of luxury to air travelers. Windows that opened beside each seat allowed Imperial's passengers a measure of climate control until the airline discovered that what had been a delightful breeze in a Rolls Royce was often a full-blown hurricane in an Armstrong Whitworth Argosy flying at 90 miles an hour. Thereafter, Im-

perial Airways planes flew with cabin windows closed.

The idea of period styling began to interest airplane builders and buyers. Passengers aboard a Handley Page airliner of the late 1920s found themselves assigned to elegantly curved chairs similar to those Howard Carter had recently

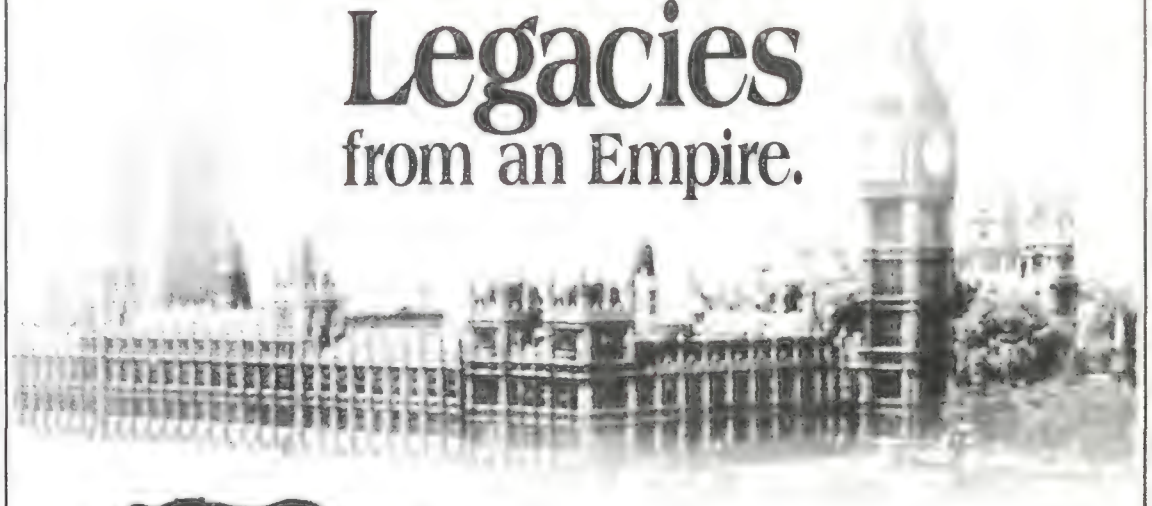
"Please unbutton my coat," he said,
his chilled hands smeared with grease.

found in the royal tomb of Tutankhamun. In the American skies, however, passenger comfort was still in the Pleistocene era. The Ford Motor Company, in its short-lived venture into commercial aviation, hewed to no-nonsense design in its trimotors. Two rows of cane-backed chairs were the best that Ford offered in interior arrangements, and these were about as cozy as the corrugated metal of the airplane itself. Boeing's trimotor, the 80-A, was trumpeted as having "luxurious appointments," but in fact it seemed little different.

Then in 1930 a public-relations genius named Steve Stimpson, working as a district manager for Boeing Air Transport, a United predecessor, conceived the idea of using nurses to serve coffee and box lunches aloft as a way to get passengers' minds off the discomforts of flying. In spite of the grumbling of pilots who felt their cockpit duties would prevent them from taking care of "frail female crew

*Ben Lawless, an irascible Smithsonian exhibits expert, copes with airline seats only after powerful inducements.*


# Legacies from an Empire.



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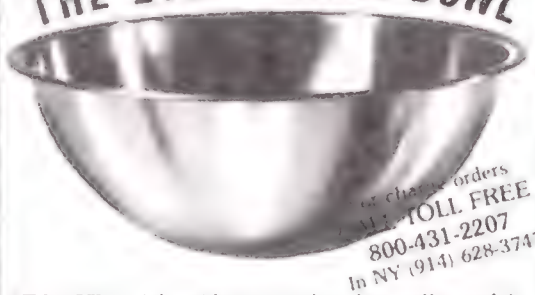

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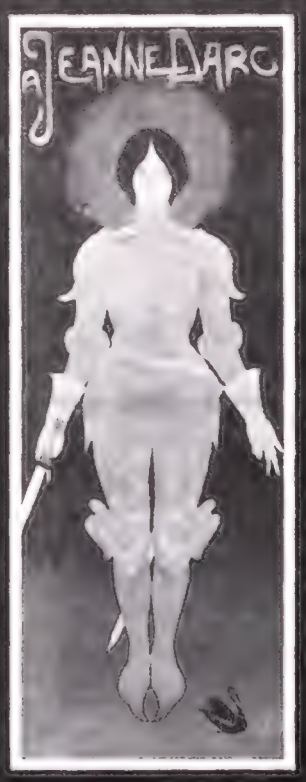
# 1890's ORIGINAL POSTERS

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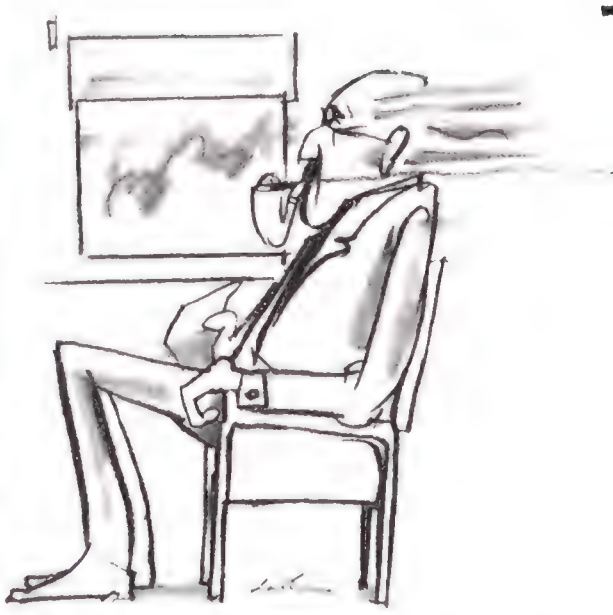

Delightful breeze in a Rolls became a hurricane in Armstrong Whitworth.

members," Stimpson hired Ellen Church as the world's first stewardess—and at once commercial flying on the Chicago-to-San Francisco run took a conspicuous turn for the better. Within three months Boeing hired an additional 20 nurses (one wag suggested dubbing them "flying buttresses"), and other American and European carriers followed suit. The ubiquitous fried-chicken box lunch served to airline passengers on airlines everywhere tasted about the same, but now the hands serving it were at least clean and there was something else to think about besides being cold and generally uncomfortable.

Although the American airline companies tried very hard to please, their Fords, Curtisses and Boeings were crude compared to English and French airliners of the same period. The Farman 180, for example, treated its customers to generous-sized armchairs and lounging divans covered in a richly patterned brocade, indirect overhead lighting and a net for personal hand luggage. Best of all was the small bar that Lignes Aériennes Farman thoughtfully included on its aircraft. It catered to the timid and weak when turbulent weather outside began to threaten.

In California, Donald Douglas decided to rethink the entire problem of aircraft seating. In 1932 one of his engineers made a cross-country flight in a Ford trimotor to see how other aircraft manufacturers were dealing with the problem of passenger comfort. The young man came back appalled. He said that riding in Ford's "tin goose" had been like flying in an iron


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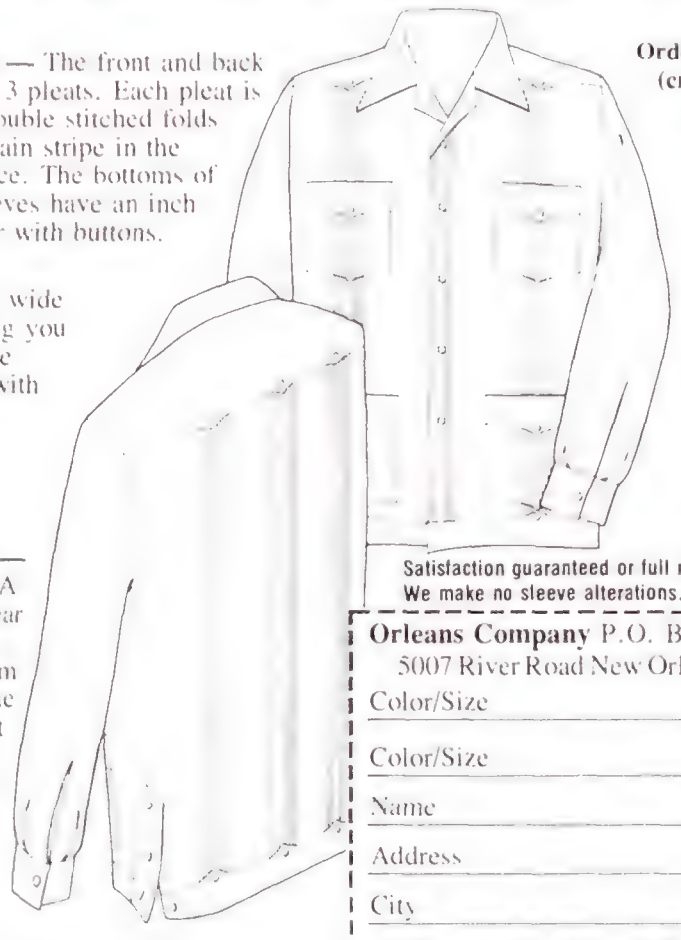

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lawn chair with cotton in his ears. The eventual result of his full report was the Douglas DC-2, a 14-passenger transport rightly touted as "comfort with wings." Its upholstered contour seats were unique for the time, spaced generously at 40 inches to give plenty of legroom. Individual reading lamps were controlled by each passenger. The most forward-looking innovations were the addition of footrests, thick carpeting and in-flight films. TWA showed a picture called *Flying Hostesses* on board a DC-2 in 1934.

Stretching this wonderful airliner to accommodate 14 "skysleeper" compartments for transcontinental routes and 21 passenger seats for shorter flights led, in 1935, to the matchless DC-3, the airliner that changed the size of the world. So popular were the flight characteristics and cabin comforts of this craft that by 1960 the DC-3 had carried more than 600 million passengers.

Martin "Pacific Clippers" of 1935 and Boeing "Yankee Clippers" of 1939 introduced Pan American's passengers to the roominess that could be found in the ample dimensions of a seaplane hull. Comfort had to be a primary consideration if people were to fly Pacific and Atlantic air routes for days at a time.

Starting with the generous 164 cubic feet of space that could be assigned to each passenger, stylists came up with "environmental seating," an idea for color coordination of everything surrounding a passenger—walls, floor and ceiling as well as chair, berth and bathroom linen. The elements of a restful atmosphere in-

In American skies, passenger comfort was still back in the Pleistocene era.


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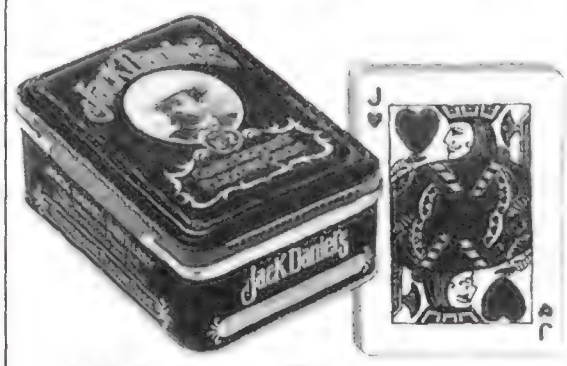

Old-time Riverboat Playing Cards

Both of these decks are prettier than a painting, and so is the antique tin card case. Each card is a bit larger and thicker than normal—like those used on riverboats in the 1890's. There's a black and a green deck—both with an antique gold "distillery design." The face cards are reproduced from 100-year-old artwork. So it's a real unusual set of cards for the serious player. Twin deck in antique case: **$8.50.** Postage included.

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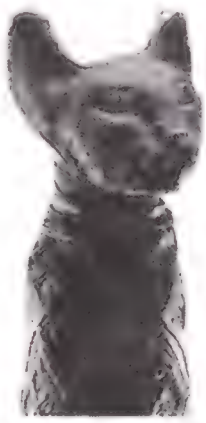

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cluded sound insulation, air conditioning and heroically proportioned compartments and passageways that encouraged the shipboard practice of early morning "constitutionals." Restfulness aboard a transatlantic Clipper could be wonderful indeed, as 81-year-old Judge Walter Moore testified at the end of the 13-hour, 38-minute flight to London in 1939: he had slept as soundly as he did at home and never enjoyed a trip more. "A very stout effort at his age," one observer later commented.

The idea of pampering passengers caught on quickly in the States, and before long one exasperated American airline executive was complaining that his harried people "did everything but tuck the passenger's napkin under his chin." The first of the extra-fare, superservice flights that became popular before World War II was inaugurated by United Airlines aboard their deluxe "Skylounge," a DC-3 equipped with soft leather swivel chairs and highly attentive stewardesses who plied the weary executives with champagne and slippers during the three-hour, 55-minute flight between New York and Chicago.

*Military discomforts*

By 1942 the demand by the military for airplanes that would handle much-needed cargo, and the dramatic rise in the numbers of people wanting to get somewhere quickly, put the nation's airlines in an unexpectedly good financial position. As anyone who flew commercial airlines during those times will remember, pampered ticket holders became about as scarce as new rubber tires. The military services used their own airline systems. Regularly scheduled Army and Navy planes crossed the continent and then the oceans. Seating aboard these planes was basic. Unless you were President of the United States, a Congressman or a high-ranking officer, you got a padded stool or metal bench far less comfortable than a parachute pack or a battered cardboard box of K rations.

During World War II, the most unusual passenger service operated out of Scotland. Called the "Ball Bearing Airline," it was managed by British Overseas Airways Corporation and used twin-engined De Havilland Mosquito bombers to carry important passengers and vital ball bearings between Leuchars, Scot-

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land, and Stockholm, Sweden. A ticketed passenger on these fast "airliners" was assigned to cramped bunk space in the modified bomb bay, where he nursed a thermos of hot coffee while the pilot dodged the bullets of pursuing German fighters across miles of stormy North Sea skies. Not since early flying days when mail and passengers bounced over the Allegheny Mountains have people paid money for such a wild ride.

A long-range Pacific bomber, the B-29 Superfortress, somehow evolved into the favorite passenger plane in the years immediately following the war. By installing a second deck, Boeing's engineers created a roomy figure-eight cross section

Farman 180 treated passengers to a small bar with a brass rail for stability.

that would seat 75 passengers and had the popular "Stratolounge" down below. Reached by a thoroughly un-airplanelike circular staircase, this watering spot extended the happy hour from New York to London and was instrumental in keeping this particular airplane flying long after it had been superseded by more efficient models.

The design of the seats for the Stratocruiser, as it was now called, required 100,000 man-hours of effort and nearly half a million dollars. The seat's features were proclaimed by Boeing designers: "The same seat which comfortably supports the 100-pound blond without springing her up into the luggage rack is equally pleasing to the 300-pounder without sinking him to the floor." Manufacturers, Boeing among them, were go-


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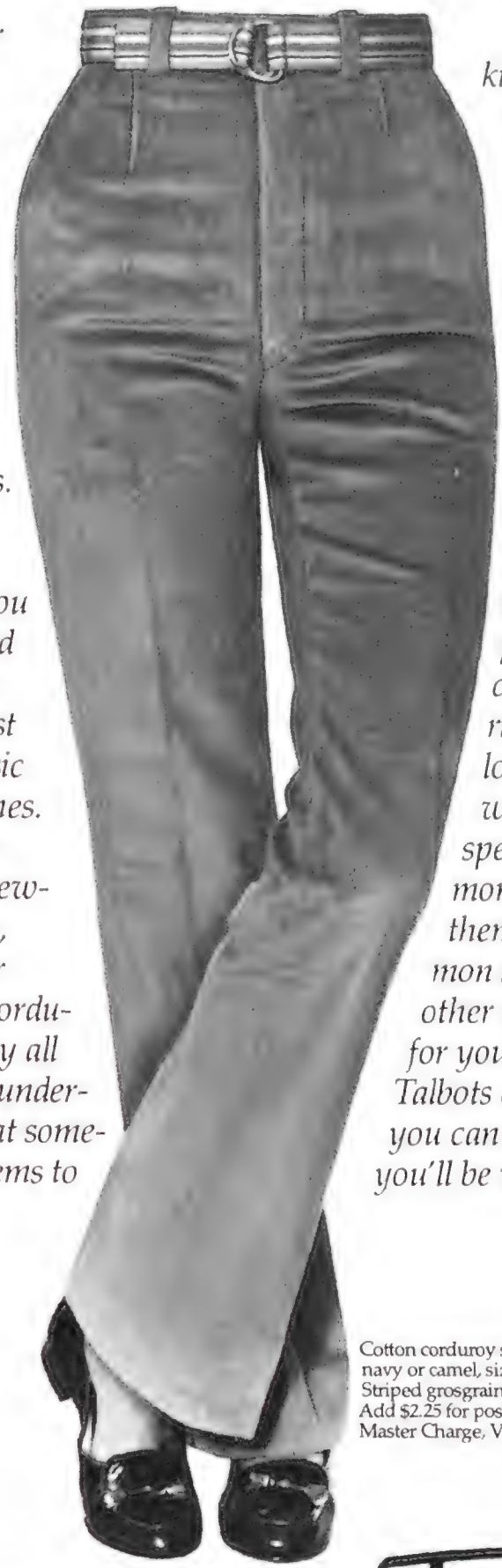

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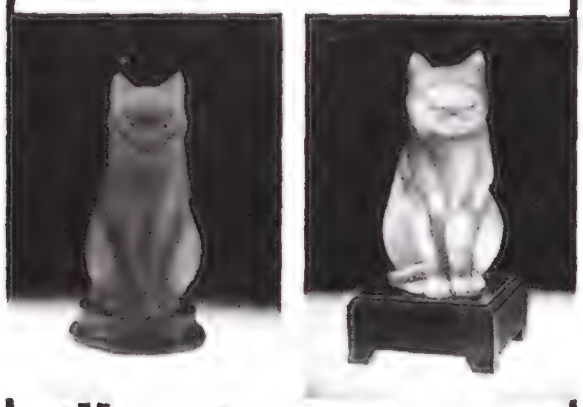

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ing all out for the postwar commercial passenger market.

Other airplanes serving as freight carriers during the war were maturing in the late 1940s as fast commercial airliners. The DC-4 and its replacement, the DC-6, the Lockheed Constellation and the immortal DC-7 competed for a rapidly developing passenger market that, by 1955, was demanding accommodations and service surpassing anything previously envisioned. Pioneer companies, 20 years earlier, had felt that they might make a little more money if they offered the folks some chicken wings to nibble on. Now interiors were styled by top designers. Raymond Loewy tackled the idea of a "new look" for United's DC-7 Mainliners, suggesting decorator colors—"dusty rose" or perhaps "sunset gold." The standard aircraft seat became a machine for sitting. It reclined to three positions and contained an outlet for a sound system. A neatly folding tray could be opened even when the seat ahead was reclined. Overhead, a recessed console housed directional reading lights, call bell and an individually controlled air

The Douglas DC-2, a 14-passenger plane, was touted as "comfort with wings."

supply for each passenger. Henry Dreyfuss, working with smaller interiors of TWA's Lockheed Super Constellation, turned some of the tweed-covered seats around and some sideways. This made the "Connie" seem more like a gentlemen's club than an airliner speeding through the skies at better than four miles a minute.

Passengers still dressed for a flight in those days, and airlines catered to this sense of ceremony by instituting extras such as the "red carpet" service, a rubber mat between the terminal and aircraft.


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By 1969 passengers were openly grumbling at being herded aboard airplanes with seating capacities like those of cattle cars. Airline agents everywhere were discovering passengers who suddenly remembered they had ailments which would gain them an extra seat if it became available. The airlines helped as much as they could by designing seats with removable armrests, and offering huge menus that would have pleased Henry VIII. Meanwhile, Boeing, Douglas

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and Lockheed were designing jumbo jets as a reasonable alternative.

In January 1970, Pan American made an inaugural flight of the first jumbo in commercial service, the Boeing 747. As originally designed, the 747 had a cabin 20 feet wide and could carry up to 490 passengers in a two-deck layout similar to the old Stratocruiser. Passenger comfort had been considered to an unprecedented degree. Movies could be shown in specially designed theaters; there was compartmentalized seating just as in the old Pacific Clippers; the legroom was fit for the tallest basketball player. By 1971 most airlines were operating their jumbo fleets at far less than capacity—not profitable for them, but sheer luxury for the passenger who often found himself able to stretch out full length on fully adjustable, adjoining seats.

Then came the oil shortage of 1973 and the deregulation of air-passenger rates in 1978. Planes were filled to capacity on nearly every route for the first time in history. Accommodations that had once seemed like those of a cattle car on the old 707s were suddenly being remembered as unimaginable luxury. Passengers on a jumbo jet hoped for dinner trays (often two hours in appearing) and had to cope with lines at ten or more toilets, all often overflowing. Seating comfort, except in first class, was moving back into the Dark Ages.

One alternative from British Airways and Air France was to fly crowded people to their destinations much faster, using supersonic aircraft. But seating aboard the SSTs is little better than the infamous "people shaper." Although the discomfort is endurable for a four-hour transatlantic flight, many passengers complain that they feel like fast-flying, cozily pampered sardines.

What is the future for the rest of us—the economy class, large-size insomniacs whose ample needs are ignored as airlines compete for maximum passenger revenue? One suggestion goes back to Wilbur and Orville Wright's original concept of the horizontal passenger. Japan Airlines has already introduced sleepers in the upper deck of its 747 that will provide a comfortable night's rest in a proper bed streaking along at an altitude of 38,000 feet. Other airlines have thought about new configurations for their aging 707s and DC-8s that would convert them into palletized sleeping planes, carrying slumberers in a three-tiered arrangement that would be low on style but high in personal comfort.

Perhaps the best suggestion for aerial comfort appeared in the film, *2001: A Space Odyssey*—a form of suspended animation. The idea of 500 frozen ticket holders whizzing through the skies might alarm some people, but if the dangers inherent in quick-freezing could be overcome and the airlines would guarantee against thawing during layovers, we would at last reach our destinations apparently instantaneously.

In suspended animation, tiers of future ticket holders—deep frozen—may just sleep their way to their destinations without a thought for comfortable seats.

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### Partial Listing of Selections and Artists

**Record One:** ***Curtain Up***
*The Barber of Seville* Overture, Metropolitan Opera Orchestra, Erich Leinsdorf, Conductor; *Die Fledermaus* Overture, Vienna State Opera Orchestra, Oscar Danon, Conductor; *Don Giovanni* Overture, Chicago Symphony Orchestra, Fritz Reiner, Conductor.

**Record Two:** ***World Famous Arias***
Largo al factotum—*The Barber of Seville*, Robert Merrill; Mi chiamano Mimì—*La Bohème*, Anna Moffo; Che gelida manina—*La Bohème*, Richard Tucker; Un bel di—*Madama Butterfly*, Leontyne Price; Celeste Aïda—*Aïda*, Placido Domingo; Habanera—*Carmen*, Leontyne Price; La donna è mobile—*Rigoletto*, Alfredo Kraus; Bell Song—*Lakmé*, Anna Moffo; Evening Star—*Tannhäuser*, Sherrill Milnes; Vissi d'arte—*Tosca*, Leontyne Price; E lucevan le stelle—*Tosca*, Jussi Bjoerling; Musetta's Waltz—*La Bohème*; Mary Costa, Anna Moffo, Robert Merrill.

**Record Three:** ***Best-Loved Duets***
Love Duet, Act I—*Madama Butterfly*, Leontyne Price & Richard Tucker; Barcarolle—*The Tales of Hoffmann*, Montserrat Caballé & Shirley Verrett; Love Duet, Act I—*Tosca*, Zinka Milanov & Jussi Bjoerling; Final Scene—*Carmen*, Leontyne Price & Franco Corelli.

**Record Four:** ***Rousing Choruses***
Anvil Chorus—*Il Trovatore*, Robert Shaw Chorale & Orchestra; Soldiers' Chorus—*Faust*, Robert Shaw Chorale & Orchestra; Pilgrims' Chorus—*Tannhäuser*, Norman Luboff Choir, New Symphony Orchestra of London, Leopold Stokowski, Conductor; Bridal Chorus—*Lohengrin*, Robert Shaw Chorale & Orchestra.

**Record Five:** ***Gala Performance***
Toreador Song—*Carmen*, Robert Merrill; O patria mia—*Aïda*, Leontyne Price; Drinking Song—*La Traviata*, Montserrat Caballé & Carlo Bergonzi; Quartet—*Rigoletto*, Anna Moffo, Rosalind Elias, Alfredo Kraus & Robert Merrill; The Flower Song—*Carmen*, Franco Corelli; Casta diva—*Norma*, Montserrat Caballé.

**Record Six:** ***Dances from the Opera***
Dance of the Comedians—*The Bartered Bride*, National Symphony Orchestra, Howard Mitchell, Conductor; Dance of the Apprentices and Entrance of the Mastersingers—*Die Meistersinger*, Chicago Symphony Orchestra, Fritz Reiner, Conductor; Gypsy Dance—*Carmen*, Leontyne Price, Vienna Philharmonic Orchestra, Herbert von Karajan, Conductor; Bacchanale—*Samson et Dalila*, Boston Pops Orchestra, Arthur Fiedler, Conductor.

**Record Seven:** ***Pageantry and Splendor***
Triumphal March—*Aïda*, Boston Pops Orchestra, Arthur Fiedler, Conductor; Magic Fire Music—*Die Walküre*, Boston Symphony Orchestra, Charles Munch, Conductor; Ride of the Valkyries—*Die Walküre*, Symphony of the Air Orchestra & Women's Chorus, Leopold Stokowski, Conductor; Prelude to Act III—*Carmen*, Vienna Philharmonic Orchestra, Herbert von Karajan, Conductor.

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*By John Massey Stewart*

# A baby that died 40,000 years ago reveals a story

*Grass, roots and traces of mother's milk are found in stomach of a mammoth calf that starved in Siberia*

This foot was one of the few parts of the mammoth calf that had retained hair.

The short life story of a 40,000-year-old baby who died of starvation while frantically eating dirt and plants has emerged in a Leningrad laboratory.

The baby is Dima, a mammoth seven to eight months old, whose preserved remains were found in northeastern Siberia in 1977 (SMITHSONIAN, December 1977). He has just had his first visit abroad: to London, where he attracted long lines as the star of the recent USSR National Exhibition there.

The 40-inch-high baby mammoth is something of a scientific sensation as the first complete mammoth found for nearly a century and a half and, indeed, the only unscavenged mammoth ever reclaimed from prehistory.

"It is impossible to overestimate the scientific impact of the discovery," said Professor Nikolai Vereshchagin, chairman of the Committee for Mammoth Research, in an interview with *Moscow News*. "When the frozen animal was brought to Leningrad," he added, "I put my hand on the dark skin and felt the chill of centuries long gone; it was as if I had touched the Stone Age."

Unfortunately, the bulldozer damaged the baby's right side, and in addition almost all the shaggy, chestnut-colored hair was separated from the body. The recovered hair, up to ten inches long (and even two inches long on his trunk), over an underwool three to four inches long—all to withstand the bitter climate—is to cover a life-size replica in Leningrad's Zoological Museum.

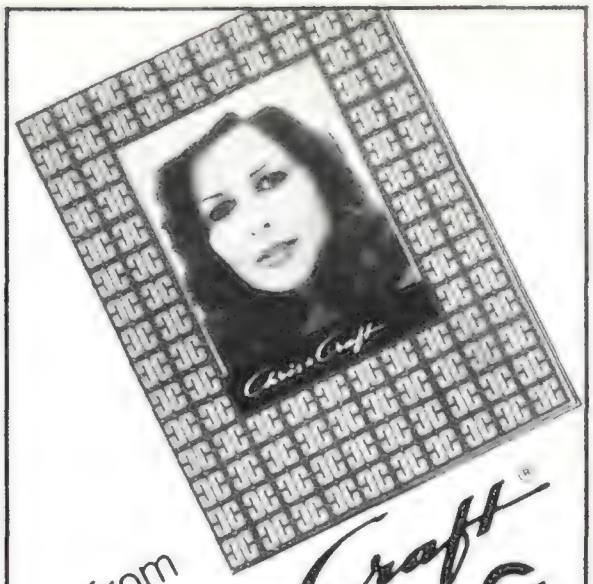
It was there, last January, after long scientific investigations, that Dima went on show for the first time, not far from the next best-preserved mammoth, the adult found at Siberia's equally remote Berezovka site in 1901.

Studying this unique specimen of the Pleistocene era has been the task of a joint Soviet-American team of scientists. They have been investigating, for example, Dima's skin, a blood clot from an abdominal vessel and the tissues of his internal organs. Several tissue specimens were sent for examination to the University of California, Berkeley, and Wayne State University, Detroit.

Professor A. P. Kapitsa and Dr. V. Averentsov, the Soviet scientists who accompanied Dima to London, have revealed much new information about the world's oldest baby: not, for a start, 9,000 to 12,000 years old, as had been thought, but—according to their radiocarbon dating—somewhere between 39,500 and 44,000 years old.

They believe that in its first (and only) summer those millennia ago, the baby mammoth, aged seven to eight months, somehow lost his mother—fatal because he was not yet weaned. After six or seven days, in a very weakened condition—indeed he had used up all his fat stores and his ribs still show pathetically—he apparently fell into a silty pit where he died of malnutrition and exhaustion.

In autumn the silt froze and was subsequently covered by landslides to a depth of six feet which prevented any thaw thereafter, preserving Dima for 400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centuries until a bulldozer driver accidentally uncovered him.

Dima's intestinal contents have produced a lot of evidence, including traces of his mother's milk. In his fruitless hunt for sustenance (he had only three milk teeth), he had eaten dirt. Less than ten percent of what he swallowed was vegetation: grass and grass seeds, roots and stems which had been half digested. It is the grass seeds (the species as yet unidentified) which testify to Dima's death in summer, perhaps even specifically in the month of August.

U.S. quarantine officials worried that mammoth samples flown to this country just might contain unknown species of bacteria against which no modern antibiotics would work. The samples are kept in sterile isolation, and so far no disease-causing bacteria have been found.

On opening Dima's skull, the scientists discovered a putrefied, structureless mass. Blood vessels in the muscles, however, still contained red and white cells.

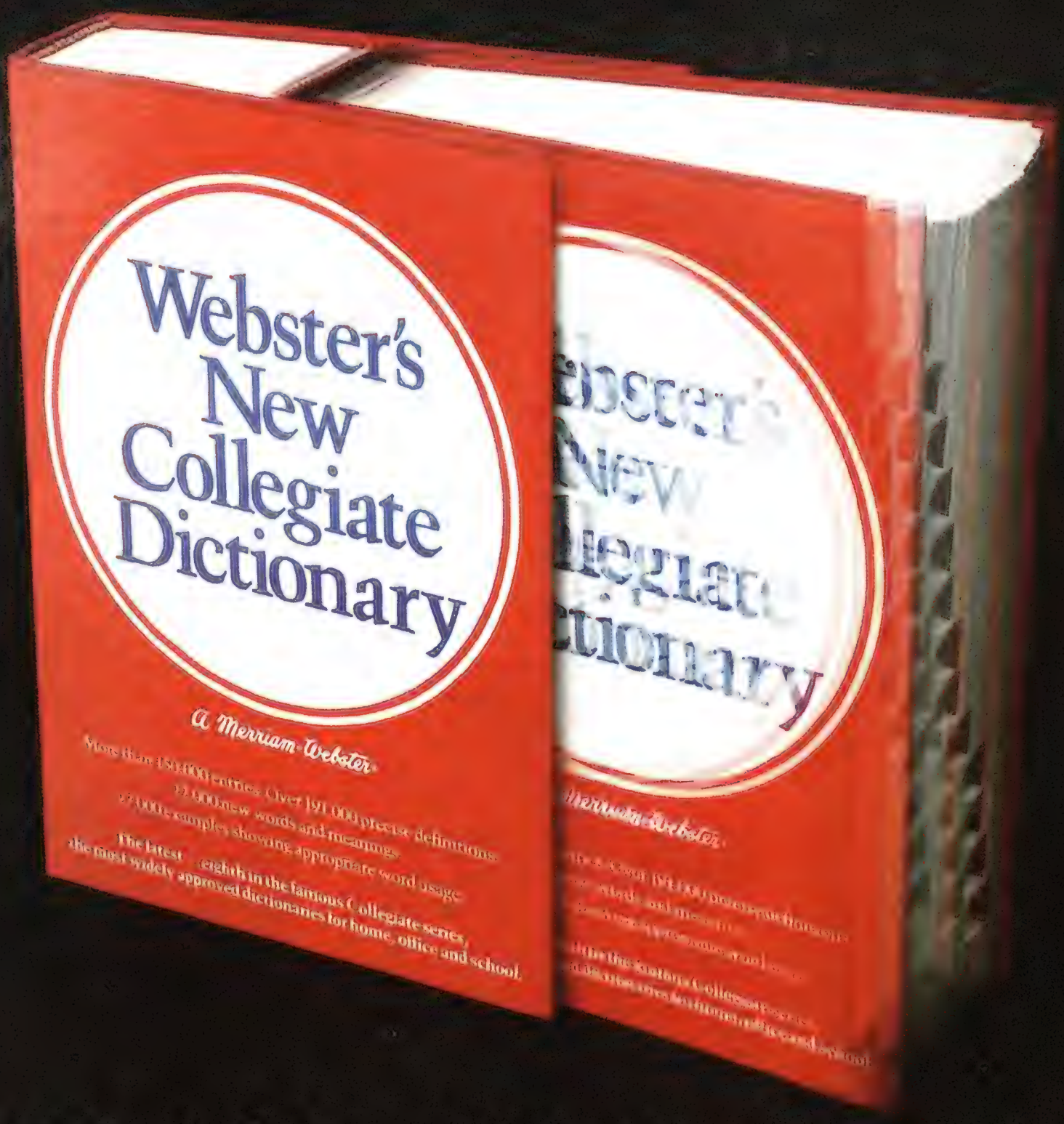
The anatomy of Dima's internal organs does not differ significantly from present-day African and Indian elephants. His ears, interestingly, are only a tenth the size of those of an African elephant of the same age; they would have frozen if larger.

Who knows what sensational mammoth finds may yet be made? Whole "cemeteries" of mammoth bones have sometimes been found in Siberia. Perhaps one day an entire cemetery of complete frozen-mammoth bodies may come to light.

The prominent ribs give an all-too-clear clue to the main cause of Dima's death.

This picture was taken in London, where the calf was part of a Soviet exhibition.

clone

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# *Book reviews*

*The Business of Enlightenment: A Publishing History of the* Encyclopédie, *1775-1800*
Robert Darnton
(Belknap Press, Harvard University Press, $20)

The publishing world of 18th-century France pulses again in Robert Darnton's valuable and scholarly work. Connivances, thievery, grandiose promotional campaigns, and workers—high and low—mesh in this story of the dissemination of the renowned *Encyclopédie* of Diderot and d'Alembert. Published between 1751

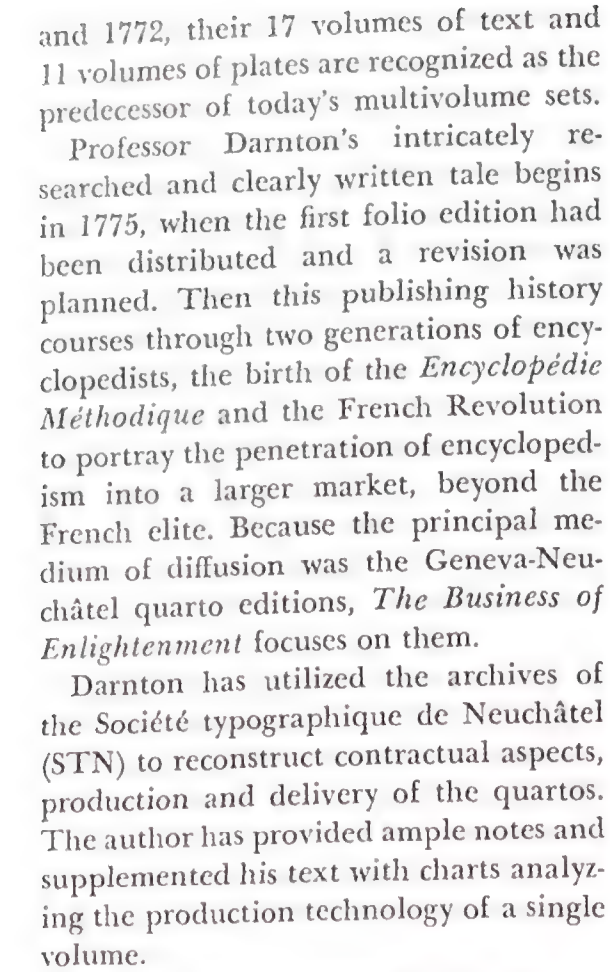
Illustration from the *Encyclopé*

and 1772, their 17 volumes of text and 11 volumes of plates are recognized as the predecessor of today's multivolume sets.

Professor Darnton's intricately researched and clearly written tale begins in 1775, when the first folio edition had been distributed and a revision was planned. Then this publishing history courses through two generations of encyclopedists, the birth of the *Encyclopédie Méthodique* and the French Revolution to portray the penetration of encyclopedism into a larger market, beyond the French elite. Because the principal medium of diffusion was the Geneva-Neuchâtel quarto editions, *The Business of Enlightenment* focuses on them.

Darnton has utilized the archives of the Société typographique de Neuchâtel (STN) to reconstruct contractual aspects, production and delivery of the quartos. The author has provided ample notes and supplemented his text with charts analyzing the production technology of a single volume.

Yet the human element of the enterprise is in no way neglected, for Darnton, professor of history at Princeton, pleasantly balances his presentation of concepts with very concrete glimpses of the people in his story. Through wage-and-time records, he has even tracked a fingerprint on one quarto page in the STN

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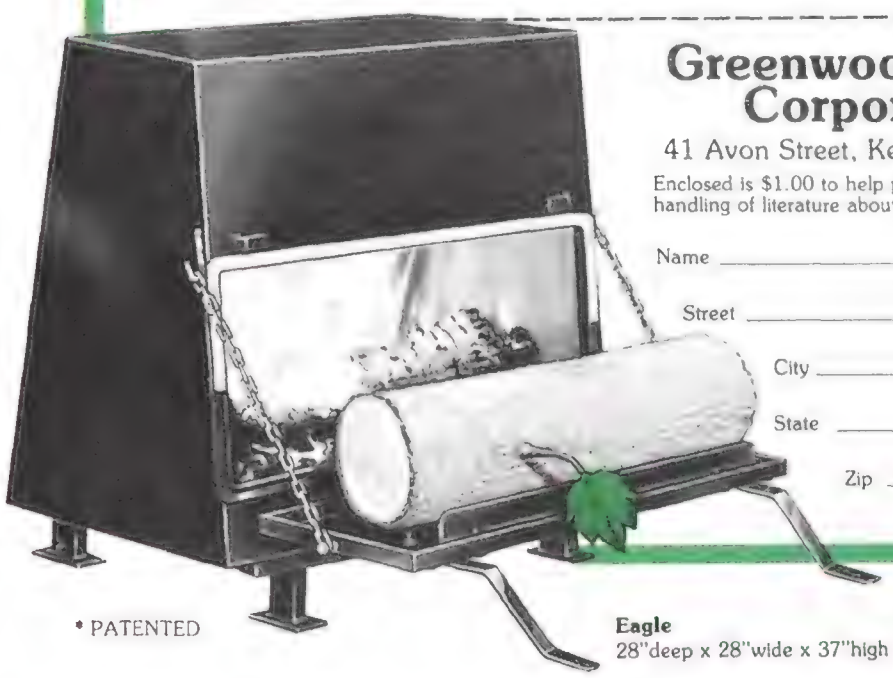

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archives back to the individual who 200 years ago retrieved the newly printed sheet from his overinked press! (Overinking reduced the amount of physical force required to impress a page but jeopardized the acceptability of the finished piece.) STN correspondence revealed that the *ours,* or pressman, was "a dark-haired Norman" itinerant printer fortuitously named Bonnemain.

An evenhanded sensitivity characterizes the author's treatment of ragpickers, smugglers, robber barons and procrastinating authors. STN directors Ostervald and Bosset emerge as painstaking, stolid Swiss businessmen, knowledgeable yet occasionally naive by comparison with the leading character in *The Business of Enlightenment,* canny capitalist Charles Joseph Panckoucke. He displayed an unfailing sense of timing in his business deals and a talent for acquiring, then using, official protection. With help from key individuals at all levels within the ancien régime, Panckoucke formed and controlled publishing consortia. Together with STN, he orchestrated the exposure of the fraud being perpetrated by the third member of the quarto-publishing triumvirate, Joseph Duplain. Part of the cutthroat Lyon book trade, Duplain had skimmed profits while he managed the bulk of the *Encyclopédie* printing job.

It may be argued that the final division of those profits from the Geneva-Neuchâtel quartos marked the establishment of Diderot's work as an 18th-century bestseller. But Darnton's inclusion of Panckoucke's crusade for the *Encyclopédie Méthodique* adds significantly to the book for it underlines the ultimate reach of encyclopedism in France. Fulfilling his dream of a revised edition, publisher Panckoucke reorganized the compendium of knowledge into subject specialties, foreshadowing the post-Revolutionary movement to compartmentalize learning through an academy system. An analysis of academy affiliations among the second generation of encyclopedists helps support Darnton's thesis.

To read *The Business of Enlightenment,* a knowledge of French is not essential but it is helpful since quotations and contracts are not translated. This authoritative volume will become a standard reference in the history of publishing.

*—Betty-Bright Low*
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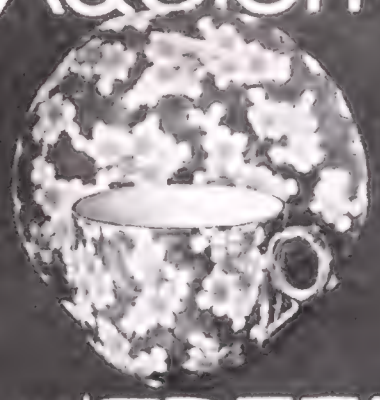

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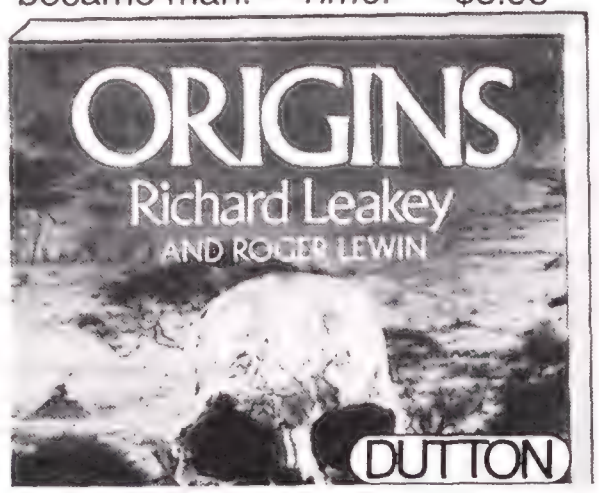




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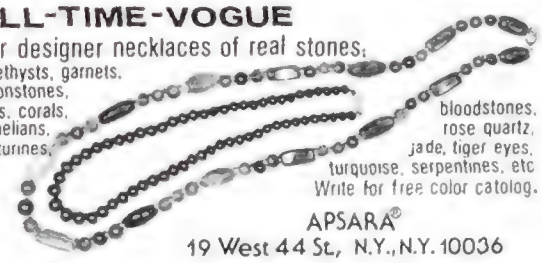

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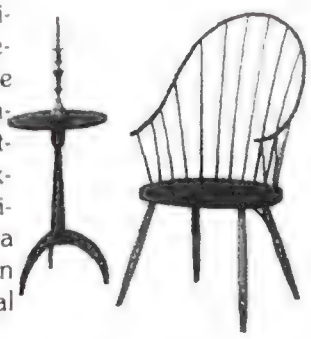

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"Above all, the Way of the Samurai should be in being aware that you do not know what is going to happen next, and in querying every item day and night. Victory and defeat are matters of the temporary force of circumstances. The way of avoiding shame is different. It is simply in death"—from *Hagakure: The Book of the Samurai.*

Death and the art of samurai-style war are the dominant themes in *Hagakure,* recorded in the early 1700s from conversations with an obscure samurai-turned-priest, Tsunetomo Yamamoto. At their height of power in the 16th century, the Japanese samurai warriors were one of the deadliest fighting forces in Man's history. The samurai's immaculate code of conduct held that death on the battlefield was life's ordered moment.

Yamamoto set down the samurai's rules and regulations after he was not permitted to commit ritualistic suicide (*seppuku*) upon the death of his lord. Yamamoto chose to become a hermit and retreated to seclusion, perhaps "hidden by the leaves" (one English translation of *hagakure*). William Scott Wilson has translated 300 of Yamamoto's 1,300 musings. They cover a wide range of topics, and are written in several forms, from allegories to just plain advice.

"At a glance, every individual's own measure of dignity is manifested just as it is. There is dignity in personal appearance. There is dignity in a calm aspect. There is dignity in a paucity of words. There is dignity in flawlessness of manners. There is dignity in solemn behavior. And there is dignity in deep insight and a clear perspective," Yamamoto wrote.

But some of the other advice is more startling. Yamamoto quotes one lord's advice for the samurai who is as yet unskilled in swordplay: "For practice in cutting, execute some men who have been condemned to death." Yamamoto himself practiced what he preached: "I went to the Kase Execution Grounds to try my hand at beheading, and I found it to be an extremely good feeling."


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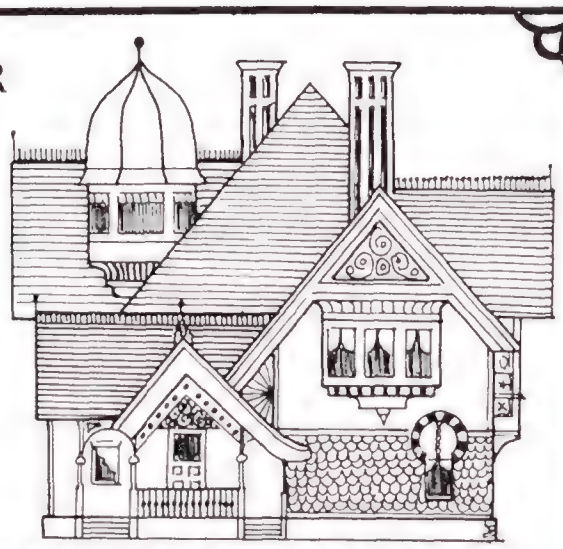

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Yamamoto's ideal samurai did not reflect the warrior of his day. His "perfect warrior" existed in the 16th century—known in Japan as The Period of the Country at War. This brings us to Noel Perrin's delightful *Giving Up the Gun: Japan's Reversion to the Sword, 1543-1879*. This short (92 pages, plus notes) book analyzes a little-known but remarkable historical incident that occurred while Japan's warrior class made up nearly ten percent of its population—a much higher percentage than in any contemporary nation. Perrin describes how the Japanese, who were "keen users of firearms for nearly a hundred years," willingly ceased the manufacture and use of firearms for two centuries beginning in the early 1600s.

Japan's leaders did not make a single decision to give up firearms. The reversion to the sword took place gradually. One reason was the nation's general reaction against outside ideas, at its strongest as Japan entered the 17th century. The samurai disliked shooting enemies in battle. Not that they were afraid of firearms. But to the samurai, the sword was preeminent: he thought of his sword as his soul. When he used it in battle, there was a fixed routine. The samurai first introduced himself, recited his ancestors' names or boasted of his reputation, and then tried to cut his opponent's head off. To the samurai, fighting with firearms was dishonorable and graceless.

Perrin points out that the reversion to the sword did not signal a total step back for Japan. Far from it. "Japan was neither decadent nor stagnant," Perrin writes. "Take the country as a whole, and one finds health and vitality." Among Japanese accomplishments in the 17th and 18th centuries were advances in metallurgy, mining, irrigation, agriculture, medicine and retail merchandising.

Is there a lesson to be learned from all this? Perrin writes that reversion to the sword could show us that progress "is something we can guide, and direct, and even stop."

One Japanese who chose to remember was Yukio Mishima, the novelist. Perrin dedicates his book to Mishima, whose later writings reflected his obsession with the code of the samurai. Mishima, who wrote an interpretation of *Hagakure,* committed *seppuku* in 1970 in a vain attempt to convince Japan's defense forces to return to the values of the samurai and

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the sword, both of which are so vividly presented in these two books.
—*Marc Leepson*
Staff writer, Editorial Research Reports

*Fusang: The Chinese Who Built America*
Stan Steiner
(Harper & Row, $11.95)

When the University of California first established an affirmative-action program for its professional schools, Asian-Americans were usually included as a protected class, worthy of special help. But recently, their inclusion has come into question, because many appeared able to gain admission based on their own qualifications. I was not surprised when I read the story. My wife used to run a high-school quiz show in Los Angeles, and she quickly realized that Asian children would often answer the questions first.

I'm not about to make an argument for Asian superiority, but there is no doubt that Oriental immigrants to America have frequently displayed remarkable tenacity and intelligence. Nor is there much question that these immigrants have been largely ignored by most American historians. Much of our history is written from a relentlessly East Coast and European perspective, and it was not until I moved to the West Coast some years ago that I began to appreciate the enormous contributions to the American heritage made by Hispanics, Chinese and other non-European ethnics.

Stan Steiner has made a career out of rectifying these omissions in our written histories. His 11 previous books include accounts of the Mexican-Americans, Puerto Ricans and Indians—and now, in *Fusang*, he has added a chronicle of "the Chinese who built America." At times it reads like a superficial collection of anecdotes, and its unblemished portrait of the Chinese as martyred saints makes me a bit uneasy. Where are the crooks and con men, the fools and the failures?

Still, it's a fascinating and useful narrative, full of stories that Steiner has unearthed by sifting through old notes and diaries and newspapers. I'll bet you didn't know that one of the earliest "Spanish" settlers of California, one Antonio Rodriguez, was really a Chinese adventurer, heir to a tradition of Pacific exploration and commerce that had deposited Chinese from Manila to Acapulco as early as the 16th century.

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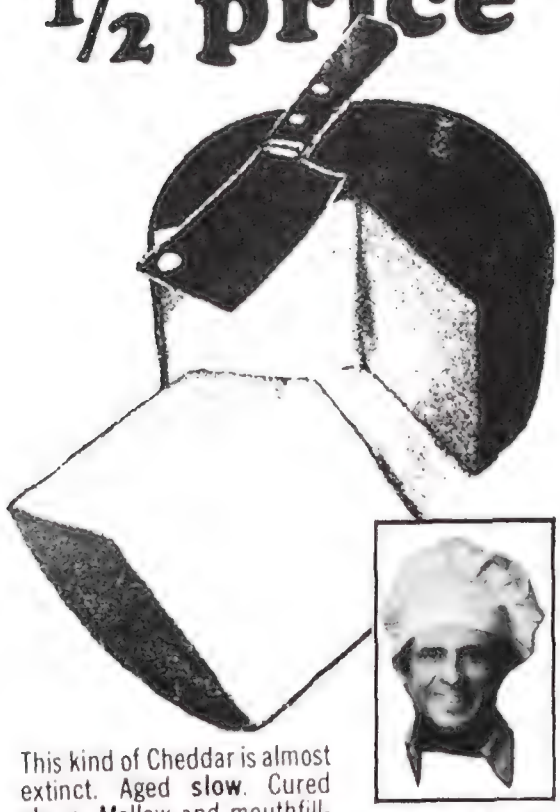



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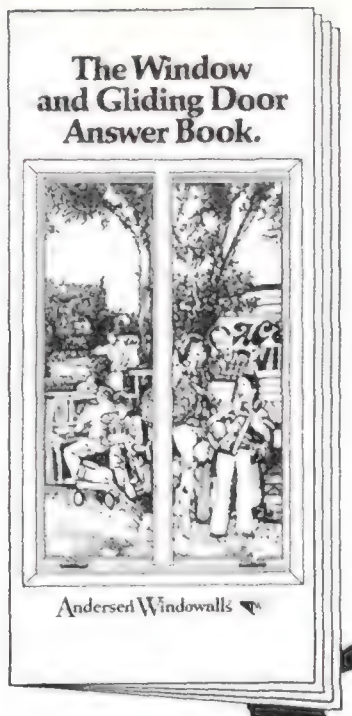
The heart of *Fusang* is Steiner's account of the Chinese in the American West, a group that made monumental contributions to mining and railroading, farming and fishing. For one thing, Steiner dispels the myth of "Oriental coolieism," the paranoiac notion that these were yellow hordes of inferior beings, swarming over the landscape like locusts. In fact, many Chinese immigrants were just like their counterparts who made the journey from Europe—hardy and adventurous types, often with money and skills of their own.

This strength of character showed in their accomplishments. It was a Chinese, Lue Gim Gong, who succeeded in adapting the orange to American conditions. It was the Chinese who drained the tule swamps of central California, creating some of the richest farmland in the world. They also planted some of the original California vineyards, started the West Coast shellfish industry, helped to build the railroad across the Sierra Nevada, and devised methods for extracting gold from claims that had been abandoned.

Indeed, the success of the Chinese led directly to their persecution. Like the Jews—and they were known as "the Jews of the Far East"—the Chinese were resented for their doggedness, clannishness and business acumen. But like the blacks, they also bore the stigma of race, and while a few sought cover among the Hispanic and Indian peoples, most of them could not hide their origins.

The result was a period of truly appalling oppression in the 19th century, when the California dream started to turn sour—for the first time—and the white man needed a scapegoat. Mutilation, vandalism, robbery, murder—the tales of terror seem endless. Like the blacks, the Chinese suffered from official, institutional racism. The California Supreme Court in 1854 decreed that Chinese could not be accepted as witnesses in court because they were a "distinct people . . . a race of people whom nature has marked as inferior."

This curious juridical attitude was reflected in a famous painting, depicting the ultimate Western triumph, the hammering of the Golden Spike that united the country by railroad. Steiner draws attention to the three workers who squat near the tracks, the ones who actually wielded the hammer. Two of them were Chinese, but they were never identified.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*Fusang* goes a long way toward identifying them and their obscure history.
—*Steven V. Roberts*
Washington bureau, *New York Times*

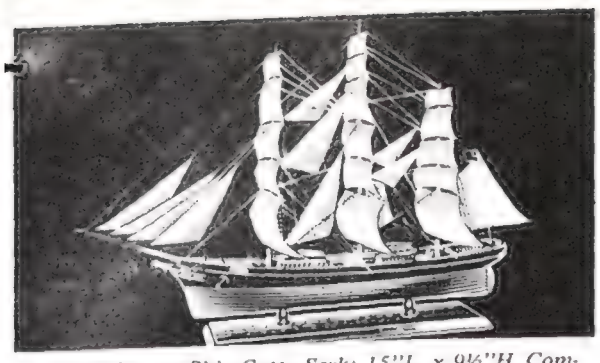
*My Works and Days:*
*A Personal Chronicle*
Lewis Mumford
(Harcourt Brace Jovanovich, $13.95)

Lewis Mumford was born in Flushing, New York, in 1895. He considered making his mark as a novelist or playwright, but in 1929 he wrote in a letter: ". . . I have kept this impulse patiently in check, for I plan to do something larger, more terrifying, than the ordinary novel or play. . . ." He had identified that "something larger" in a letter in 1925 as "nothing less than an attempt . . . to describe what has happened to the Western European mind since the breakdown of the medieval synthesis, and to trace out the effects of this in America."

In more than 20 books written over the course of half a century, Mumford has done just that. Particularly representative of this effort is his monumental "The Renewal of Life" series *(Technics and Civilization,* 1934; *The Culture of Cities,* 1938; *The Condition of Man,* 1944; and *The Conduct of Life,* 1951) which covers the histories of technology, cities, thought and religion from the fall of the Roman Empire to the present, and the implications of these histories for the conduct of our lives.

Mumford's investigation of the relationship between technology and culture extends that of Marx and predicts that of McLuhan, although Mumford differs with both Marx and McLuhan in that he sees the human mind and not technology as central to the relationship. Since 1960, in *The City in History* and *The Myth of the Machine,* Mumford has pressed his investigation back to the emergence of human culture.

But to write only about Mumford's great study of technology and culture is to describe him in terms that are too limited. Following his mentor, Patrick Geddes, Mumford is a regionalist, urbanist, ecologist and activist citizen as well as a writer. He is also a poet, a playwright *(The Builders of the Bridge)* and a literary critic. His *Golden Day* is a pioneering study of the work of Emerson, Thoreau and Whitman. His *Herman Melville* is a brilliant combination of biography



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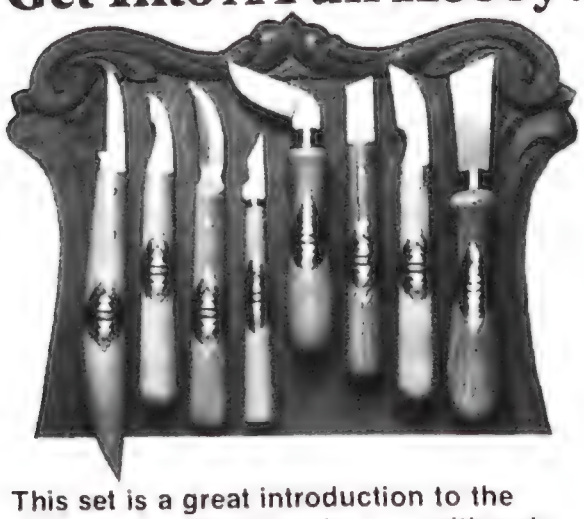

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and spiritual portrait and claims for Melville recognition as America's greatest novelist.

Mumford later used his skill as a biographer in *Green Memories* to deal with the death of his son, Geddes. He is also an art and architectural critic, as revealed in *The Brown Decades* and *Sticks and Stones,* and in his columns for *The New Yorker* magazine. Finally, Mumford is a writer of letters. Of all of his work he is surest about his letters, writing: "What is worth saving you'll find in the letters." Despite the range of Mumford's concerns, he is not lacking in focus. His subject is always human life as a whole, and his point of view is always from his own life as a whole.

The book at hand is autobiographical —drawing, as he says, "the picture of a mind in the making." Taken from "random notes," correspondence, published and unpublished articles, poems, stories and books, *My Works and Days* is a feast of all of life, revealing Mumford's literary skills as well as his beliefs, passions, loves, friendships, intelligence, growth, sexuality and humor. A few of Mumford's subjects are his boyhood in New York, his adolescent romances, his marriage, his frustrating encounters with Patrick Geddes, his correspondence with Van Wyck Brooks, his extramarital affairs, his activism before the Second World War, the death of his son in the war and his growing concerns over the use of nuclear weapons.

The book is exceptional in its honesty and in the fascination it holds for the reader. But its importance lies beyond the pleasure with which we can read it, and even beyond the truths of a life that it reveals. Its ultimate importance is in its relationship to all of Mumford's work. The human enterprise, from the beginning, has been a great venture into both making and understanding our place in the world. Each of us participates in his own way, but a few such as Mumford set for themselves the task of stepping back and comprehending the whole.

It has been from himself as the knower that Mumford has confronted the human condition and, the more we know of Mumford, the more we know of the knowing of the human condition.

*—John Lobell*
Pratt Institute School of Architecture,
Author, *Between Silence and Light . . . ,*
a study of Louis I. Kahn


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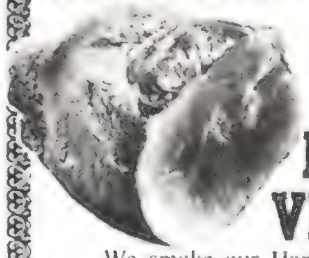

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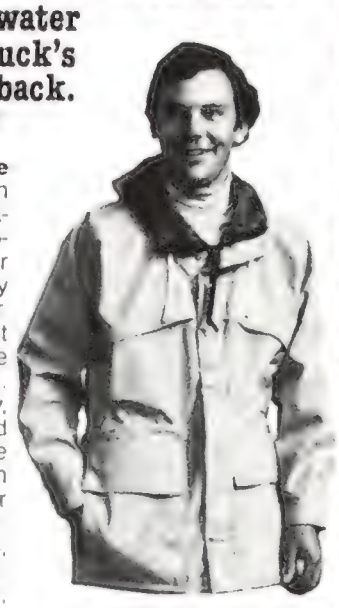

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*For further information:*

Mr. James Symington
Room 1465
Arts and Industries Building
Smithsonian Institution
Washington, D.C. 20560

# *Additional reading*

**Thomas Alva Edison** (p. 34)

*A Streak of Luck* by Robert Conot, Seaview Books (New York), 1979

*Edison* by Matthew Josephson, McGraw-Hill, 1959

*The Electric-Lamp Industry; Technological Change and Economic Development from 1800 to 1947*, Arthur A. Bright jr., Arno (New York), 1972

**Pandas** (p. 44)

*Men and Pandas* by Ramona & Desmond Morris, McGraw-Hill, 1967

*The Wilderness Home of the Giant Panda* by William G. Sheldon, University of Massachusetts Press, 1975

*The World of the Giant Panda* by Richard Perry, Taplinger, 1972

**Norton Simon** (p. 50)

"The Norton Simon Museum of Art at Pasadena," *The Connoisseur,* special issue of November 1976

*Selections from the Norton Simon, Inc. Museum of Art* by David W. Steadman (catalog), Princeton, 1972

"The Bronzes Degas Never Knew" by Patricia Failing, *ARTnews,* April, 1979

"The Norton Simon Museum: It's really impressive" by Patricia Failing, *ARTnews,* February 1978

**Costa Rica** (p. 64)

*Los Parques Nacionales de Costa Rica* by Mario A. Boza, INCAFO (Madrid), 1978 (Spanish-language edition; English edition in preparation)

"The Birds of Costa Rica: Distribution and Ecology" by Paul Slud, *Bulletin of the American Museum of Natural History,* Vol. 128, 1964


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*A Naturalist in Costa Rica* by Alexander F. Skutch, University of Florida Press, 1971

*Central American Jungles* by Don Moser and the Editors of Time-Life Books, 1975

**Morgan Library** (p. 76)

*An Introduction to the Pierpont Morgan Library* by Frederick B. Adams jr., Pierpont Morgan Library, 1964

*The Proud Possessors* by Aline B. Saarinen, Random House, 1958

*J. Pierpont Morgan, an Intimate Portrait* by Herbert L. Satterlee, Macmillan, 1939

**Tamerlane** (p. 88)

*The Golden Road to Samarkand* by Wilfrid Blunt, Hamish Hamilton (London), 1973

*Embassy to Tamerlane* by Ruy Gonzalez de Clavijo, translated by Guy Le Strange, George Routledge & Sons, Ltd. (London), 1928

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**Railway stations** (p. 98)

*The Railroad Station* by Carroll L. V. Meeks, Yale University Press, 1956 (third printing 1975)

*American Building Art* by Carl W. Condit (2 vols.), Oxford University Press, 1960-61

*The Vanishing Depot* by Ranulph Bye, Livingston Publishing Company (Wynnewood, Pennsylvania), 1973

*Grand Central: The World's Greatest Railway Terminal* by William D. Middleton, Golden West Books (San Marino, California), 1977

**Airplane seats** (p. 113)

*The American Heritage History of Flight*, American Heritage, 1962

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*High Horizons* by Frank J. Taylor, McGraw-Hill, 1958

**Baby mammoth** (p. 125)

*Ice Age Mammals and the Emergence of Man*, National Museum of Natural History, Elephant Press, Smithsonian Institution, 1976

*A Book of Mammoths* by J. Augusta and Z. Burian, Paul Hamlyn, Ltd. (London), 1963


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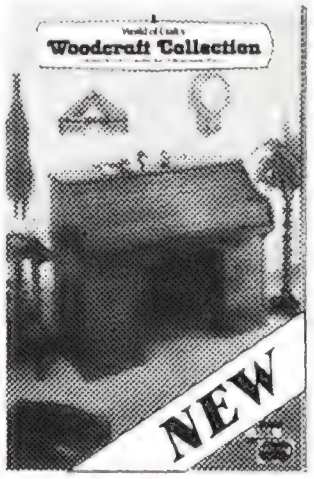


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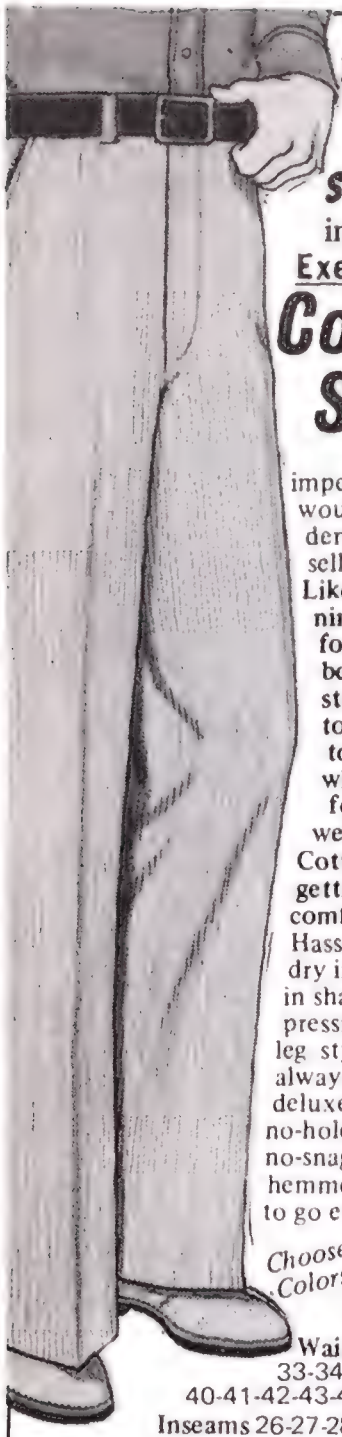

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# *Smithsonian highlights*

All that glitters in the Renwick's exhibit of Irena Brynner's jewelry is gold: unique head ornaments, chains, necklaces, rings, combs and wedding bands. A Russian-born artist whose career centered in the United States in the 1960s (and who now lives in Switzerland), Miss Brynner is noted for her innovative techniques.

Innovation and glitter of a different sort are reflected in another September exhibition, this one at the Museum of History and Technology commemorating Edison and his electric light (p. 34).

Some of the finest scientific landscapes of the American West drawn during the 19th century go on exhibit this month at the Museum of Natural History (pp. 142-143). The artist is William H. Holmes (1846-1933), who had an extraordinary career as geologist, archaeologist and administrator at the U.S. Geological Survey (SMITHSONIAN, March 1979) and the Smithsonian Institution.

## Special September exhibits

**Air & Space Museum**
*Frisbee Disc Festival* (September 2, 12:00-5 P.M.; rain date, September 3)—Fancy-maneuver workshops and demonstrations of disc flying, on field east of NASM.

**Cooper-Hewitt Museum** (New York)
*Selections from the Smithsonian* (September 11-January 6)—Reflecting various themes in design, this is an exhibition of natural and man-made objects chosen from the Smithsonian collections of more than 70 million items.
*The Cooper-Hewitt Collections: Glass* (through November 25)—Some 100 objects representing styles from Rome to the present, including Tiffany and engraved 18th-century glass.
*Concerts in the Carnegie Garden* (September 18, 6 P.M.)—The Valerie Hammer Project, a music and dance performance.

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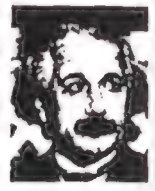

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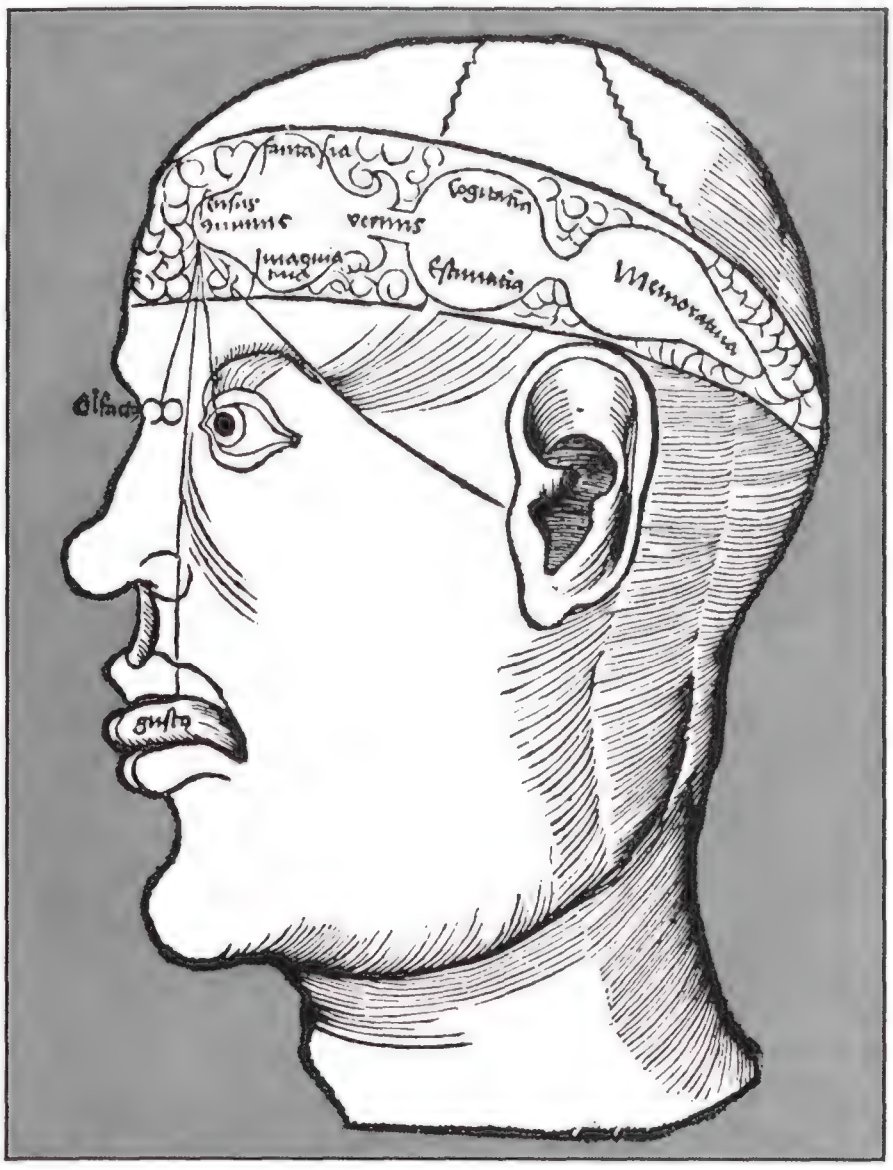


Is the brain a computer? What is the role of chemistry in brain function? Is the capacity of speech "hard-wired" into the brain? Where in the brain is the mind?

These are questions that will engage your interest in the September issue of SCIENTIFIC AMERICAN.

This issue does not, by any means, tell you "how the brain works." That remains one of the most alluring and baffling questions on the frontier of understanding. The convergence of work in many disciplines—from neurosurgery to linguistics—has begun to put that question, however, in ways that can yield answers.

The deep new knowledge about the brain, gathered at an accelerating rate in recent years, shows this organ to be marvelously designed and capacitated beyond the wonders with which it was invested by ignorant imagination.

Here are the articles:

- The Brain (Introduction)
- The Neuron
- Small Systems of Neurons
- The Organization of the Brain
- The Development of the Brain
- The Chemistry of the Brain
- Brain Mechanisms of Vision
- Brain Mechanisms of Movement
- Specializations of the Human Brain
- Disorders of the Human Brain
- Thinking about the Brain

Each of the authors of this issue has made significant contribution to the growing body of knowledge about the brain. Together they offer a comprehensive exposition of present understanding and chart the way for continuing study.

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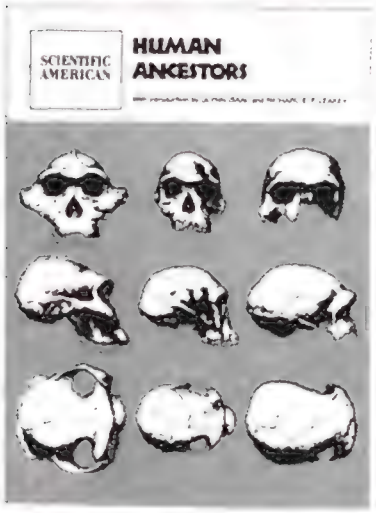


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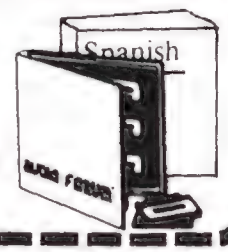


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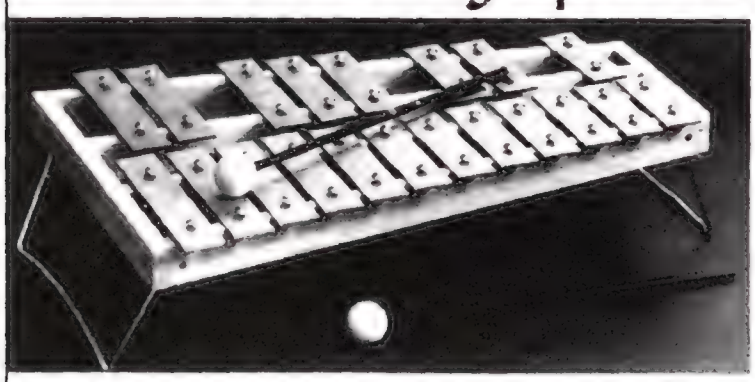

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*Folklife in the Museum* (September 27-30)—Films, symposium and demonstrations on American folk-medicine practices.
*Make the Dirt Fly: Building the Panama Canal* (September 18-October 31).

**Museum of Natural History (MNH)**
*William H. Holmes' Geologic Art, 1872-1882* (September 15-November 11).
*Dynamics of Evolution*—Recently opened permanent hall uses dioramas, films and specimens to illustrate life processes.

**National Collection of Fine Arts**
*Prints for the People: Selections from New Deal Graphics Projects* (September 14-December 2)—Lithographs, etchings, woodcuts and prints from the NCFA collection of "Depression art" created under the New Deal's Work Projects Administration (WPA).
*Childhood: Children in American Art* (through September 16).
*Contemporary Art from Alaska* (NCFA Traveling Exhibition)—Alaska State Museum at Juneau, through September 30.

**Renwick Gallery**
*Irena Brynner: Jewelry Since 1953* (September 28-January 13)—Exhibition includes some 70 pieces of gold jewelry.

and Canyon, by William H. Holmes.

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**MNH's Baird Auditorium**
*Active Volcanoes of the Eastern Caribbean* (September 10, 8 P.M.)—MNH curator Richard S. Fiske presents an illustrated talk on volcanic activity—which he witnessed and measured on the island of St. Vincent—and discusses global plate tectonics and future eruptions.
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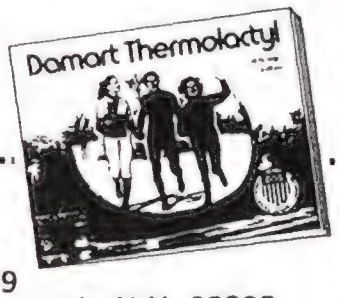


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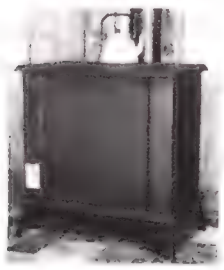

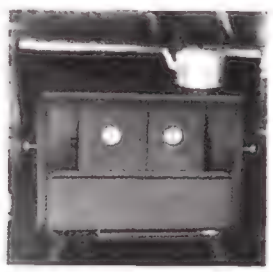

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the film's producer, Mildred Freed Alberg. *Bats: Myth and Reality* (September 24, 6:00, 8:30 P.M.)—MNH curator Merlin Tuttle presents the first of the monthly Audubon Lecture Series on the behavior and preservation of wildlife.

### Membership benefits when visiting the Smithsonian

**The Associates Reception Desk,** in the castle, is open from 10 A.M. to 4 P.M. daily for registration, event-exhibit information, and special orientation publication.

**The Associates Lounge** in the castle is open from 10 A.M. to 5:30 P.M. daily.

The Members' Dining Room, **"The Court,"** in the Museum of Natural History, is open, beginning September 4, Monday through Friday for lunch (11 A.M.-3 P.M.); on weekends for breakfast (8:30 A.M.-11 A.M.) and for brunch (11 A.M.-3 P.M.). Enter via Constitution Avenue for breakfast.

For pre-visit information packet, send postcard or phone Associates' Reception Center, Smithsonian Institution, Washington, D.C. 20560 (202-381-6264). Allow two weeks for receipt.

## Radio Smithsonian

This music-and-conversation program is broadcast weekly on approximately 50 stations across the country. For dates and times, consult your local radio station:

*Radiation: What We Should Know* (week of September 2)—Discussion on the effects of low-level radiation, especially x rays.
*Life in an English Country House* (week of September 2)—This cornerstone of English society is explored by Oxford professor and writer Mark Girouard.
*Exploring Our Environment* (week of September 9)—A tour of Smithsonian's Chesapeake Bay Center for Environmental Studies.
*A Conversation with Jessica Tandy* (week of September 9)—Star of *The Gin Game* reviews her career with *Washington Post* drama critic emeritus Richard Coe.
*Return to Albion* (week of September 16)—A look at Americans over the past 200 years who chose to live in England.
*The Phillips Collection in the Making* (week of September 16)—The story of the oldest U.S. museum of modern art, founded by Duncan Phillips in 1918.
*Buildings Reborn* (week of September 23)—The many issues involved in finding new uses for old buildings.
*Travels with David Hockney* (week of September 30)—British artist talks about his work and the inspiration of his frequent travels—from Egypt to Los Angeles.

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*Space Policy: Today and Tomorrow* (week of September 30)—Space law experts discuss questions of "the last frontier."

### Smithsonian Institution Traveling Exhibition Service

SITES circulates exhibitions to hundreds of cities outside Washington, D.C. To sponsor a show in your community, write to Eileen Harakal, SITES, Smithsonian Institution, Washington, D.C. 20560. Here are some September openings:

**Huntsville, Alabama** (September 29-October 28)—*Audiences of the Moon,* Alabama Space and Rocket Center.

**Phoenix** (September 15-October 14)—*Year of the Hopi,* Heard Museum.

**St. Petersburg, Florida** (September 8-October 7)—*The Graphic Works of Odilon Redon,* Museum of Fine Arts.

**Columbus, Georgia** (September 22-November 10)—*20th-Century Sculptors and Their Drawings: Selections from HM&SG,* Museum of Arts and Sciences.

**Ames, Iowa** (September 22-November 4)—*Close Observation: Oil Sketches by Frederic E. Church,* Iowa State University.

**Springfield, Massachusetts** (September 29-November 11)—*Louis M. Eilshemius: Selections from HM&SG,* Springfield Museum of Fine Arts.

**Port Huron, Michigan** (September 22-October 21)—*Edison and the Electrical Age,* Museum of Arts and History.

**Duluth, Minnesota** (September 1-30)—*American Drawings II,* Tweed Museum.

**Kansas City, Missouri** (September 15-October 28)—*Daum: 100 Years of Glass,* William Rockhill Nelson Gallery of Art.

**Omaha** (September 15-October 28)—*The Phillips Collection in the Making: 1920-1930,* Joslyn Art Museum.

**New York City** (September 29-October 28)—*Images of Earth From Space,* Hayden Planetarium.

**Rochester, New York** (September 22-October 21)—*Edison and the Electrical Age,* Rochester Museum and Science Center.

**Toledo** (September 22-October 21)—*Edison and the Electrical Age,* Toledo-Lucas County Library.

**Houston** (September 29-October 28)—*Crosscurrents: Neoclassical Drawings and Prints from the Cooper-Hewitt Museum,* Rice Museum.

**Tacoma** (September 29-October 28)—*Visionary Drawings: Architecture and Planning,* Tacoma Art Museum.

**Victoria, British Columbia** (September 1-30)—*Rails of the World: Paintings by J. Fenwick Lansdowne,* British Columbia Provincial Museum.


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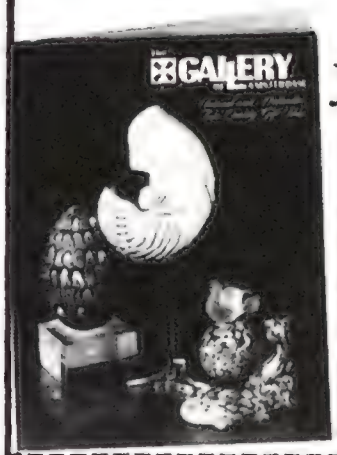


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## Domestic Study Tours

These tours offer specialized guidance and expertise generally unavailable to persons traveling on their own:

**Desolation and Gray Canyons**—September 30-October 10, or October 11-21: Whitewater trip for the adventurous; explore geology, wildlife and exciting Indian and outlaw history of Green River in Utah.

**Archaeological Dig**—October 6-13: Join archaeologists in an actual dig in Illinois, supplemented by instruction, lectures, laboratory work and field trips.

**Smithsonian Sampler Weekend**—October 12-14 or October 26-28: Bring the family for behind-the-scenes tours of specially selected museums.

**Asheville, North Carolina**—October 19-22: Visit historic homes in this mountain resort during peak of fall foliage.

**Florida Keys**—October 28-November 4: Explore coral reefs, tide pools and sponge beds with staff at Newfound Harbor Marine Institute on Big Pine Key.

**National Air & Space Museum**—November 16-18: A behind-the-scenes tour of this popular museum and of Silver Hill, the restoration and storage facility.

**Antiques in Atlanta**—November 29-December 2: Lectures and field trips in conjunction with High Museum's annual antiques show.

**Christmas at Smithsonian**—December 7-9: Traditional tree-trimming party and special behind-the-scenes tours including private viewing of gem collection.

**Virgin Islands Adventure**—January 14-23 or January 23-February 1: Explore the British Virgin Islands by chartered sailboat and observe exotic life of the coral reef.

**Baja Whale Watch**—February 1-9 or February 9-17: Observe gray whales and marine life from a chartered sport-fishing boat. Study natural history of the Baja California coast and islands.

**South Texas Wildlife**—February 21-29: Follow winter bird migration to the warm climate of the Gulf and Rio Grande Valley to explore fascinating wildlife refuges.

**Yellowstone in Snow**—February 22-March 2: Explore Jackson, Wyoming, and Yellowstone in winter while learning about the wildlife of the surrounding region.

**Tetons Winter Ecology**—March 14-22: In cooperation with the "Grand Teton Environmental Education Center," study the delicate balance of nature in winter. Includes cross-country skiing, day trips and evening programs.

**Washington "Anytime" Weekend:** Choose any weekend to visit your choice of Smithsonian museums, spend two nights at Loew's L'Enfant Plaza Hotel or Hyatt Regency Washington, each close to the Mall, and see other sights in the city by Tourmobile. Reservations and payments at least ten days prior to arrival.

## Foreign Study Tours

These tours range in size from small group experiences to charter adventures and vary in price from low cost to deluxe, depending on the type of travel, destination visited and length of trip:

**Sultans' Treasures***—September 23-October 8: A sampling of Turkey's rich and varied heritage: Istanbul, followed by excursions to Aegean Turkey or Anatolia. Concludes in Ankara.

**Spain***—September 30-October 14: Enjoy the cosmopolitan atmosphere of Madrid, museum visits and excursions to historic sites in New Castile. Then visit either Santiago, Barcelona or Andalusia.

**Japan**—October 21-November 6: Discover historic Japan with visits to Kyoto and Nara followed by choice of travel to shrines and castles of remote Central Honshu or national parks and rugged coast of the Noto Peninsula. Rejoin group in Tokyo. (Originates and ends in San Francisco.)

**Guatemala**—October 31-November 11, November 21-December 2, January 23-February 3, or February 20-March 2: Explore Mayan ruins with archaeologist. (Originates and ends in Guatemala City.)

**Mayan Mexico: The Yucatán Peninsula**—November 11-23, December 5-17, January 8-20; or February 5-17: A complete tour of unique Mayan ruins of the Yucatán. (Tour originates and ends in Mérida.)

**New Zealand**—November 21-December 7 or February 20-March 7: Tour includes talks on natural history, the Maori heritage, parliament and home visit. (Tour originates and ends in Los Angeles.)

**Winter Russia***—December 28-January 11: Leningrad, Tallinn and Moscow plus optional two-day excursion to Vladimir and Suzdal; activities include gala New Year's Eve party, troika ride, visits to schools, factories, theater, circus.

**Chilean Highlands**—January 18-February 2: Rugged outdoor learning experience for small group. Raft down the Bío-Bío River and hike with a naturalist to glaciers, volcanoes, waterfalls and forests.

**Egypt-Israel Cruise**—March 17-April 7: Join noted archaeologists and anthropologists for a three-day program in Cairo and a 17-day cruise aboard the *Argonaut.* From the Red Sea port of Safâga, visit Luxor, Karnak and the Valley of Kings. From Aqaba, travel to Petra and the Wadi Rumm on the Arabian Peninsula. Transit the Suez Canal for Palm Sunday weekend in Jerusalem and Haifa. Continue to the Greek islands of Santorini and Crete, arriving in Athens for the colorful Easter celebration.

**Ecuador and the Galápagos Islands**—April 18-May 1: Visit Quito, then travel by train to Guayaquil to board the *Buccaneer* for a seven-day voyage through the famous Galápagos Islands. Participate in shipboard study seminars; meet with scientists at the Charles Darwin Research Station; observe the rich plant, bird and animal life.

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**Man's Quest for Wings**—Sept. 30-Oct. 5: Experts at the National Air and Space Museum highlight achievements and triumphs in the wondrous history of flight. Includes a day's visit at the renowned preservation, restoration and storage facility at Silver Hill to view the finest and most varied collection of airplanes, spacecraft and memorabilia in the world.

**American Antique Furniture**—Oct 14-19: Connoisseurship of furniture pieces as great works of art, 1650-1840. Includes fakes and forgeries, care and repair of antiques, and tours of Winterthur Museum and other outstanding collections.

**Arts of Imperial Russia**—Oct. 24-28: Lectures on painting, architecture, literature, music and the decorative arts under the czars, combined with tours of the opulent exhibit from Moscow's Tretyakov Gallery and the Russian Museum of Leningrad, as well as the unparalleled collection of Russian decorative arts at the Marjorie Merriweather Post Museum. Coordinated by the Kennan Institute for Advanced Russian Studies.

**China: A Cultural History**—Oct. 28-Nov. 2: Prehistory to the enigmas of today, with emphasis on the intellectual and artistic traditions and the great philosophies and religions. Includes recent films and tours of the outstanding collection of the Freer Gallery of Art.

**Historic House Preservation**—Nov. 4-9: Lectures and tours with eminent authorities of numerous projects successfully completed and under way, including lovely urban properties and country estates. Coordinated by the Historic House Association of America.

**Please send requests for full information on content, accommodations and fees by seminar title to Selected Studies, A & I 1190A, Smithsonian Institution, Washington, D.C. 20560 or telephone (202) 381-6434 for details.**


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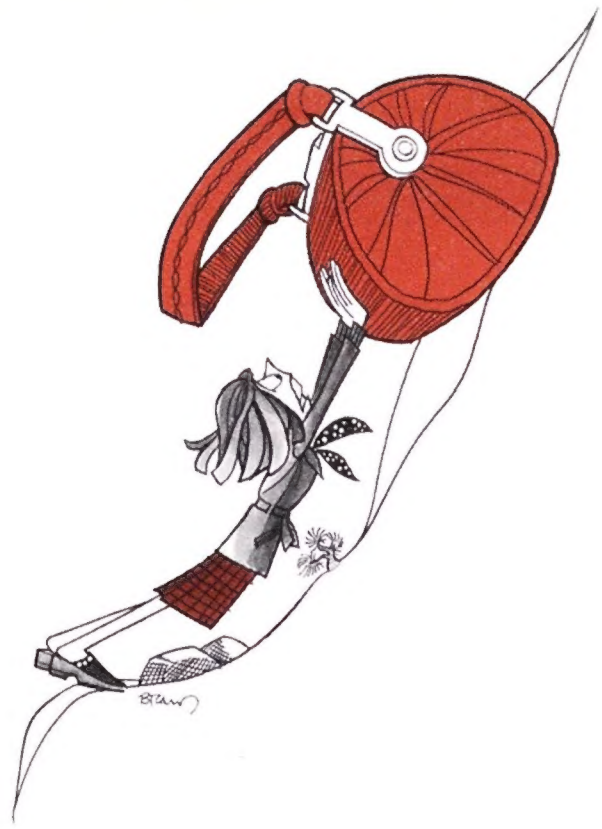
*By Bea Bourgeois*

# *Welcome to the messy world of purses, gentlemen*



It's no secret that the world of haute couture long since went unisex. Women wear pants, men wear bracelets; women wear ties, men wear bikinis. This came as something of a culture shock to me, raised traditionally as I was in a family where Father dressed every day in a vested suit—the better to argue cases in a Chicago courtroom—and Mother dressed for housework in a printed cotton frock, wearing nylon stockings with her Cuban-heeled shoes.

The winds of change continue to blow through every spring and fall fashion forecast. They have gusted to the point where the well-dressed man is now advised to carry (call it what you will) a purse. Good luck to him, I say.

Despite a collection of purses on my closet shelf—enough of them to suggest a mild dementia—I have yet to find a purse that is efficiently designed and comfortable for either sex to haul around. Purses evolved, I suppose, as an alternative to carrying one's belongings in a fish-net bag or a shortened burlap sack with a drawstring at the top. Nonetheless, purses simply do not work.

On my shelf are envelope bags, pouches, rectangular straw boxes and floppy, soft-leather objects large enough to hold a fair-sized watermelon for the family picnic.

With such a selection at hand, why am I gliding toward my mid-life crisis without ever once discovering a purse that makes sense? Perhaps when more gentlemen begin *carrying* purses, instead of just designing them, they will discover the inadequacies of the monster objects they have created.

A recent news story described a brand-new ailment on the American medical scene. Known as "shoulder bag syndrome," its symptoms are the sore and aching muscles prevalent among women who carry undetermined tonnage around in those fat sacks that hang from a strap on the shoulder.

I've never been able to control a shoulder bag. Shoulder bags are deceitfully light, stuffed only with crumpled tissue paper, when on display. Fill them with the possessions accumulated over a six-month period and they weigh far too much to be gracefully managed. Perhaps I am terminally round-shouldered; perhaps I've missed the knack of keeping the strap in its proper place. Whatever, I'm chronically knocking over canned-goods displays in the supermarket as the strap slides off the edge of my shoulder and slams the weight of the bag with a quick thud on my forearm.

There are two solutions. We can return to the Joan Crawford/Rosalind Russell era of huge padded shoulders (a trend already well under way in Paris and here). Or, if that fails to take hold, let's opt for compulsory epaulettes on all dresses and jackets: insert strap, snap epaulette shut, and *voilà*—a slipless strap (not to be confused with a strapless slip)!

I never can find anything in my purse. I've tried rigid purses and soft purses; small, medium and large purses; leather, straw, canvas, vinyl, paisley, imitation alligator purses. It could be that my own untidy life-style (my slogan being "Clean but Messy") compounds the confusion.

Whatever its design, my purse needs to hold a file of unanswered letters, a wallet bulging with credit cards, repair ticket stubs for the eternally broken appliances, a checkbook, several dried-up ball-point pens, a ring of keys that would startle a prison warden, greeting cards waiting to be mailed, and a lump of coupons, half of them expired, offering me 7¢ off on my next pound of margarine or bottle of mouthwash.

It's not just my own clutter. As the mother of three sons, I know why every family needs a female parent. Not just because she can cook, clean, chauffeur console and consent; oh, no. It's because mothers come equipped with purses. On the beach, at the park, leaving the souvenir stand, the cry is abroad in the land: "Just put it in Mother's purse till we get back home."

My purses have held an odd mélange of objects: pigeon feathers, chipped marbles, smooth but very sandy stones, sandals up to size 5, half-eaten popcorn balls in red plastic wrap, souvenir paperweights, broken sunglasses, a miniature thermometer in the shape of the Washington Monument, and eternally unwrapped pieces of bubble gum, hard as concrete. I am living testimony to Shakespeare's assessment of purse snatching.

It's about time that children were told to "just put it in *Dad*'s purse till we get home." This might even contribute to a new generation of better marriages, since both male and female will have matching, chronically sloping shoulders.

Welcome to the club, gentlemen. And if you ever figure out how to unsnap the clasp or unzip the zipper on your latest fashion accent while holding your car keys, a bag of groceries, an umbrella and a carton of soda bottles, do let me know.

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**KILT**
Formerly in one piece with the shoulder plaid, but now worn separately. Highland regiments of the British Army wear the kilt.

**PLAID**
Means a garment, the main garment of early times, which was kilt and blanket-wrap all in one piece. Tartan is the characteristic cloth of Scotland, woven in stripes.

**CADADH**
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